THE BULLETIN

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AUGUST
1939
—
VOLUME 7
—
NUMBER 3

THE NATIONAL ASSOCIATION
OF NURSE ANESTHETISTS

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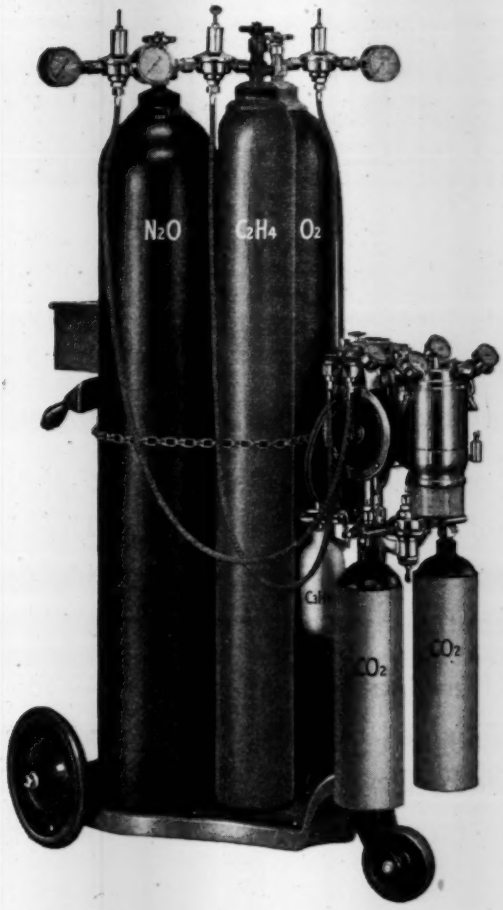

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The Bulletin of the National Association of Nurse Anesthetists

VOLUME 7, NO. 3 AUGUST, 1939

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TORONTO, CANADA — 1939 CONVENTION CITY

Toronto is the second largest city in Canada and is situated on the northern shore of Lake Ontario, midway by rail between New York and Chicago. It is easily accessible by automobile—a short day's trip from Detroit, Mich.; Erie, Pa.; Rochester or Syracuse, N. Y. No irksome formalities are forced on the traveler at the International Border—one merely presents state automobile license card, and the passing of the Customs takes but a few minutes.

Among the attractions offered is swimming at Sunnyside Beach, where one of the world's largest heated swimming pools is operated. An enjoyable half-hour tour may be made in a launch along Toronto's beautiful waterfront. Points of interest include old Fort York, with original blockhouses; the Royal Ontario Museum (five great museums under one roof); the House of Parliament; and Allen Gardens—a horticultural collection from the four corners of the earth. Casa Loma, a spacious French chateau transplanted to Canada, is open to visitors. Banting Institute, the Connaught Laboratories, Toronto General Hospital and Hospital for Sick Children, are world famous institutions associated with the University of Toronto.

The King Edward Hotel, visited by kings and potentates, comprises 1000 rooms, is thoroughly modern and centrally located, and has two beautiful restaurants and cafeteria, with a famous NBC broadcasting band. Rates: Single rooms $3.00 to $5.00; double rooms $5.50 to $8.00. Make your reservations early.

Lobby—King Edward Hotel

SEVENTH ANNUAL MEETING

NATIONAL ASSOCIATION OF NURSE ANESTHETISTS

September 26 to 29, 1939, inclusive

TORONTO, CANADA

Held in conjunction with the American Hospital Association

HOTEL HEADQUARTERS: KING EDWARD

All general sessions will be held in the Convention Hall.

Registration

Convention Hall, including Monday, September 25th (no registration at hotel) 9:00 A.M. to 12:00 P.M.; 2:00 to 4:00 P.M.

9:00 A.M. to 12:00 P.M.; 2:00 to 4:00 P.M.

Registration fee — $1.00

All members and guests are requested to register.

Members will present membership card.

Badges and National pins may be obtained at registration desk.

Please register at American Hospital Association desk for bar pin A.H.A.

Each member and guest will please present National badge at entrance to Assembly Hall, for each session.

Tickets for banquet and luncheon may be purchased at registration desk.

Attention is called to the excellent commercial and scientific exhibits open daily from 9:00 A.M. to 5:00 P.M.

TENTATIVE PROGRAM

Monday, September 25th—Meeting of the Board of Trustees

King Edward Hotel

Tuesday Morning, September 26th

9:30 A.M. GENERAL SESSION

Convention Hall

Miriam Shupp, President, Presiding

Invocation

Dr. John Gibson Inkster, Knox Church, Toronto, Canada

Address of Welcome

The Honorable Ralph C. Day, Mayor, Toronto, Canada

Greetings from the American Hospital Association

G. Harvey Agnew, M.D., President

10:00 A.M. BUSINESS MEETING

Miriam Shupp, President, Presiding

Report—President
Executive Secretary
Treasurer
Roll Call by States
State Activities

1:00 P.M. Annual Meeting—Alumnae Association, University Hospitals School of Anesthesia, Cleveland, Ohio

Tuesday Afternoon, September 26th

2:00 P.M. BUSINESS MEETING

Miriam Shupp, President, Presiding

Reports of Standing Committees
Appointment of Tellers
New Business

7:00 P.M. Banquet—King Edward Hotel
Music—Dancers
Invocation
Introduction of Guests
Guest Speaker—Hugh Eayrs, Pres., MacMillan Publishing Co., Toronto

Wednesday Morning, September 27th

9:45 A.M. GENERAL SESSION

Hazel Blanchard, Troy, New York, Presiding

"The Value of a Well-Organized Anesthesia Service in a Hospital"
Joseph G. Norby, Superintendent, Columbia Hospital, Milwaukee, Wis.

"Cooperative Action in the Health Field"
John R. Mannix, Detroit, Exec. Dir., Mich. Society for Group Hospitalization

"Physiology of Anesthesia"
James Graham, M.D., St. John's Hospital, Springfield, Ill.

Luncheon at the "Old Mill"
(Arrangements to be announced from Convention floor)

Wednesday Afternoon, September 27th

2:00 P.M. GENERAL SESSION

Mary C. Brown, Miami, Fla., Presiding

"Repeated Dosages of Avertin in Plastic Surgery"
Forest Young, M.D., Ass't Professor of Surgery and Charge of Division of Plastic Surgery of Rochester University School of Medicine and Dentistry, Strong Memorial Hospital, Rochester, N. Y.

"Cyclopropane Versus Ether"
Serena Huntimer, San Francisco, California
"Cyclopropane—Report of 6000 Cases"
Katherine Jurgenson, Minneapolis, Minn.
"Explosion Hazards"
Warren P. Morrill, M.D., American Hospital Association
General Discussion

INSTRUCTORS' SESSION

Miriam G. Shupp, President, Presiding

4:30 P.M.—6:00 P.M.

Thursday Morning, September 28th

10:00 A.M. GENERAL SESSION

Harriet Aberg, Plainfield, N. J., Presiding

"Preoperative Medication and Postoperative Treatment"
Myra Babcock, M.D., Detroit, Mich.
"The Anesthetists' Service to Mankind"
V. E. Henderson, M.D., Professor, Pharmacology and Toxicology, Faculty of Medicine, Univ. of Toronto, Toronto, Canada
"Principles of Relationship Between Anesthetists and Hospitals"
Robin C. Buerki, M.D., Chairman, Council on Professional Practice, Chicago, Ill.
"Resuscitation in the Operating Room"
Frederick R. Mautz, M.D., University Hospitals of Cleveland, O.

12:00 P.M. Joint Luncheon—King Edward Hotel

School of Anesthesia Alumnae Associations:
Long Island College Hospital, Brooklyn, N. Y.
Jewish Hospital, Philadelphia, Pa.
University Hospitals, Cleveland, Ohio

Thursday Afternoon, September 28th

2:00 P.M. GENERAL SESSION

Miriam G. Shupp, President, Presiding

Informal Round Table
Unfinished Business
Report of Tellers
Introduction of Officers

Friday Morning, September 29th

9:00 A.M. Clinics—

Toronto General Hospital, 101 College Street
Toronto Western Hospital, 399 Bathurst Street
The Hospital for Sick Children, 67 College Street
St. Michael's Hospital, 30 Bond Street

HOTEL ACCOMMODATIONS IN TORONTO, CANADA

Royal York Hotel—1200 rooms
Single rooms: $4.00, $4.50, and $5.00 per day
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Four persons: $2.50 per day per person

Ford Hotel—750 rooms
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Double rooms: $2.50 to $5.00 per day
Three or four persons: $6.00 and $8.00 per day

Prince George Hotel—250 rooms
40 double rooms with bath: $4.50, $5.00, $6.00 per day
25 double rooms with running water: $3.50 and $4.00 per day
15 single rooms with running water: $2.00 and $2.50 per day

Walker House Hotel—150 rooms
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Double rooms: $3.00 to $5.00 per day
Three or four persons: $4.50 to $7.50

Windsor Arms Hotel—150 rooms
Single rooms: $2.50 and up
Double rooms: $3.50 and up

Alexandra Palace Hotel—150 rooms
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Double rooms: $4.00 to $6.00

Westminster Hotel—110 rooms
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Double rooms: $4.00 to $4.50

Waverly Hotel—100 rooms
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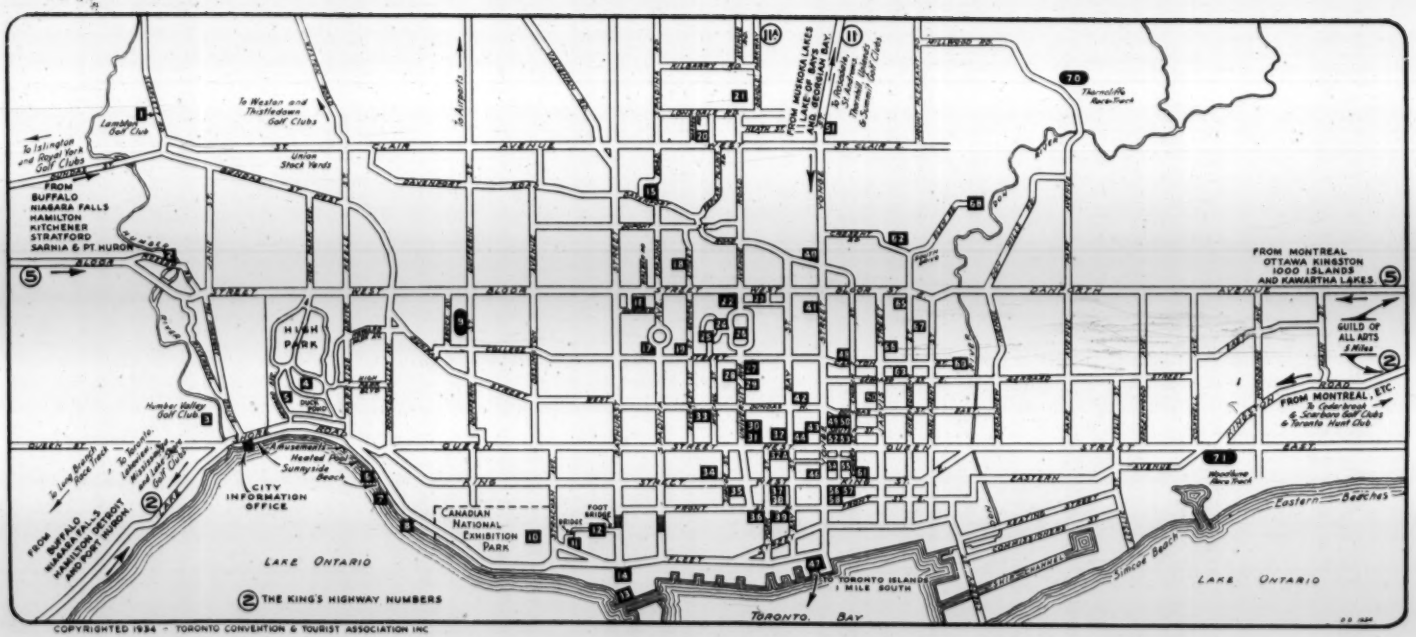
Tudor Hotel—50 rooms
$2.50 up

Hotel Headquarters—King Edward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TORONTO BAY
Eastern Beaches
Simcoe Beach
Thorncliffe Race Track
Woodbine Race Track
FROM MUSKOKA LAKES GEORGIAN BAY & LAKE OF BAYS AND
To Thistledown, Weston & Summit Golf Clubs
THE KING'S HIGHWAY NUMBERS
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Map of Toronto

THE TREATMENT OF POSTOPERATIVE COMPLICATIONS

FREDERICK A. COLLER, M.D.
and
GEORGE N. J. SOMMER, Jr., M.D.
Department of Surgery, University of Michigan, Ann Arbor, Michigan

Presented before the Mid-South Post Graduate Nurse Anesthetists' Assembly, Memphis, Tenn., February 15-16, 1939.

The most important pulmonary affections occurring following operations are atelectasis, pneumonia and embolism. The treatment of embolism is at best largely preventive and is outside the scope of this discussion. The largest number of cases of so-called postoperative pneumonia are actually cases of atelectasis; pneumonia, when present, usually originates from preceding atelectasis. The latter disorder arises from the blocking of small and large bronchi by retained normal or abnormal secretions. Atelectasis may be lobular or lobar in type, depending on the location of the bronchial occlusion. The majority of cases are of the lobular type and are often extensive, involving many segments of pulmonary tissue.

Aspirated secretions in the bronchi are those normally present in the oral cavity, those coincident with operations on the upper respiratory passages and mouth, or vomitus. These secretions may be aspirated during or following operation. The secretions arising in the bronchi are those normally present, those due to irritation of an anesthetic agent such as ethyl ether, and those due to chronic or acute bronchial disease.

Postoperative pulmonary atelectasis does not occur without retention of bronchial secretions. Their normal removal depends upon coughing, which is greatly diminished or absent during unconsciousness due to certain diseases, or anesthetic agents such as avertin. Debilitating diseases and surgical conditions which demand an extensive operation may diminish the strength of the patient sufficiently to prevent an efficient cough. Painful wounds, especially those in the upper abdomen, and a mobile thoracic wall resulting from operations on the lung and pleura, also interfere with effective coughing. The presence of thick, tenacious sputum so often associated with pulmonary atelectasis may increase the difficulty in raising the secretions.

The prevention of pulmonary complications can be aided by the application of certain measures. The position of the patient on the operating table is of importance, and the Trendelenburg position should be used whenever possible. Following operation, the Trendelenburg position again affords an opportunity for secretions to pass toward the pharynx and prevents their gravitation into the bases of the lungs. The most important of all measures is the periodic voluntary cough on the part of the patient. It is desirable that the patient awaken promptly on completion of the operation and then be made to cough and clear the tracheobronchial tree before being allowed to leave the operating room. Coughing must be urged upon the patient at frequent intervals by the medical and nursing

staffs. In addition, the patient should be aided by the support of painful wounds, and every encouragement should be given him to clear the bronchial tree completely. Coughing is frequently more effective when the patient is in the erect or semi-erect position rather than in the supine or Trendelenburg position. Therefore when the patient is encouraged to cough, the particular position should be used which is best suited for the individual. Frequent changes of the patient's position with the use of each lateral position alternately is a valuable procedure. The sputum may be loosened by the use of steam inhalations and expectorants. Inhalations of 10 or 15 per cent carbon dioxide with oxygen have been advocated in the prevention and treatment of pulmonary atelectasis. The hyperventilation and bronchial dilatation which result from the administration of carbon dioxide encourage the movement of bronchial secretions. However, it should be pointed out that unless followed by voluntary cough and expectoration, the carbon dioxide inhalations may actually be harmful if the patient is in the semi-Fowler position, since they allow secretions to gravitate deeper. If unconsciousness is present, it is especially important that the patient be placed in the Trendelenburg position during the administration of carbon dioxide. Sufficient doses of narcotics are useful to control excessive pain, which often restrain the patient in his efforts to cough. Excessive and repeated doses of opium derivatives produce semiconsciousness with an absent cough reflex, leading to a retention of bronchial secretions. It cannot be too strongly urged that such excessive medication be avoided.

The early diagnosis of pulmonary atelectasis depends upon the recognition of its physical signs. The presence of a wet, unproductive cough with audible rales heard at times some distance from the patient, is of special importance and is an early as well as a late sign; it may be the only evidence of an impending atelectasis. On examination of the thorax, the respiratory movements are noted as being shallow; the percussion note over the involved region is impaired; rales are present and the breath sounds may be suppressed or high-pitched; fremitus varies but is usually decreased. Elevation of the temperature, pulse and respiratory rates is usually present and may have occurred with suddenness. One of the most characteristic signs is the shift of the heart, trachea and other mediastinal structures toward an affected lung due to its diminution in volume. Roentgenological examination confirms the diagnosis with its demonstration of decreased aeration of the involved portion of the lung. A differentiation from lobular pneumonia is not always possible with the roentgenogram alone unless shift of the mediastinal and diaphragmatic position is present.

The successful treatment of pulmonary atelectasis depends on the maintenance of adequate bronchial drainage and a dry tracheobronchial tree. If the measures described beforehand have not been employed, they should be tried as soon as a diagnosis of atelectasis has been made. Frequently they will suffice. If they have already proven ineffectual and if the patient is so ill that effective coughing is not possible, the bronchial secretions should be removed with intratracheal and intrabronchial suction, which should be used at once.

Intratracheal suction is carried out with a No. 16F rubber catheter that is preferably not too soft. The catheter is

introduced through the nose and into the pharynx and is advanced through the larynx on inspiration. Voluntary coughing or coughing stimulated by turning on the electric suction pump connected with the catheter aids in its introduction into the trachea; this last measure is particularly useful with semiconscious or unconscious patients who cannot cough voluntarily. The catheter is connected with the pump through a Lukens bronchoscopic collecting tube, which is useful for measuring the amount and determining the characteristics of the secretions. The collecting tube should be fitted with a rubber stopper in which a one-quarter inch hole is present. The suction is applied by occlusion of the hole with the thumb. Although the collecting tube is useful, it is not essential, as the suction can be interrupted conveniently by pinching the catheter. After the catheter has been introduced into the trachea, all secretions are removed from it before the catheter is advanced into the two main bronchi. The introduction into the left bronchus is usually possible by advancing the catheter while the head and face are turned sharply to the right. Suction is used for only a few seconds at a time and is interrupted to afford an opportunity for quiet breathing. Coughing stimulated by the suction raises secretions from the smaller into the larger bronchi, from which they are readily aspirated.

Intratracheal and intrabronchial suction may be carried out as often as is necessary to keep the bronchi free of secretions. Dramatic results are obtained. Patients unconscious from anoxemia are restored following the removal of obstructing secretions. Usually 5 to 15 cc. of sputum are removed at each aspiration, although occasionally larger amounts are recovered. One should not hesitate to employ this measure in the prevention and treatment of atelectasis whenever it is apparent that a patient is unable to raise secretions satisfactorily. Secretions should be removed in the operating room, if at the conclusion of the operation the patient is unable to cough and raise the secretions.

Bronchoscopy is employed in the treatment of atelectasis whenever there is difficulty in the introduction of a catheter in the presence of an indication for intratracheal suction. No delay should be permitted in resorting to bronchoscopy when the need is present. The procedure can be carried out readily in the patient's room with the patient seated almost upright, supported by the back of the bed. The operator introduces the instrument while standing on the bed behind the patient. Oxygen may be administered, as is often advisable, through the distal suction incorporated in the instrument. Direct visualization of the bronchi is possible and epinephrine solution may be applied to swollen mucous membranes after removal of secretions. It is sometimes advisable to use bronchoscopy even when catheter suction is possible, to make certain that all secretions have been removed and that no visible bronchi remain blocked.

Conclusion: Success in the prevention and treatment of pulmonary atelectasis following surgical operations is secured only by constant vigilance on the part of the patient's attendants. This attention should begin in the operating room. The simplest and most readily available means for the removal of bronchial secretions is the voluntary cough, urged and aided by physicians and nurses. Intratracheal and intrabronchial suction should be used without delay whenever the simpler measures fail to remove secretions from the bronchi completely.

SPINAL ANESTHESIA AND THE NURSE ANESTHETIST

MORTON J. TENDLER, B.S., M.D., F.A.C.S.

Department of Surgery, College of Medicine, University of Tennessee

Read at the fifth annual convention of the Mid-South Post Graduate Nurse Anesthetists' Assembly, held in Memphis, Tenn., February 15-16, 1939.

Anesthesia is as old as the beginnings of man. Dr. Matthew Henry pointed out that God Himself had introduced anesthesia in surgery and obstetrics, since He caused "a deep sleep to fall upon Adam" when he "excised" the rib that gave "birth" to Eve. It took mere man many thousands of years to discover methods of anesthesia that might, in but a small way, compare with the excellence of that first anesthesia.

Anesthesia, as we know it today, belongs in its entirety to the very century in which we now live. The introduction of ether to the medical profession in 1842, by Dr. Crawford W. Long of Jefferson, Georgia, was the beginning of the new era. What myriads of discoveries and paths of progress in the fields of medicine and surgery have followed since that memorable year! Our profession has advanced in this less than one hundred years a thousand fold, over the five thousand years of civilization that preceded them.

The field of anesthesia has developed a great army of expert physician and nurse anesthetists. The field of the physician anesthetist is an important and active one. It is to the physician anesthetist that we look for improvements in general, local, regional, spinal, rectal and intravenous anesthesia. In his position, connected with a university, with well equipped laboratories, he is encouraged and aided, not only in his efforts toward improvements on older methods, but also in his search for newer and more ideal anesthetics. He is the torch bearer as well as the standard bearer. And you, young women, are his ladies-in-waiting and his handmaidens. For wherever there is one physician anesthetist there are ten of you to carry on his teachings and his actual labors in relieving suffering humanity. The field of anesthesia is wide and the demands for more and better anesthetists, both physician and nurse, are constantly increasing. I believe there never will be conflict between them, for we will always need both—one as a teacher, the other as the disciple in the field.

Since Koller first applied cocaine as a local anesthetic in 1884, a new vista was opened widely in surgery, in all of its branches. Encouraged by Koller's reports, a neurologist, J. Leonard Corning of New York, in 1885 injected cocaine and other drugs in the subarachnoid space in dogs. Later that same year he injected 30 minims of 3 per cent solution between the eleventh and twelfth dorsal vertebrae into the subarachnoid space in a human, producing analgesia of the lower extremities and the genitalia. He christened his method "spinal anesthesia". In 1894, in one of his papers, he suggested its possible use in surgical practice, his practice being limited entirely to neurology. It was not until 1898 that August Bier, a surgeon of Kiel, Germany, had the temeri-

ty to have 2 cc. of 1 per cent cocaine solution (20 milligrams) injected into his own spinal canal to observe its effects. The analgesia was satisfactory, and excepting for a slight headache which followed, there were no unpleasant results. Early in 1899 he reported in medical literature the first six cases of spinal anesthesia upon surgical patients. In San Francisco, in October, 1899, Tait and Caglieri performed an operation under spinal anesthesia but they did not report it until April, 1900. The first report in this country was published by America's premier scholar of surgery, Rudolph Matas of New Orleans, in the J.A.M.A. of December 30, 1899.

The wave of popularity which followed Bier's reports was short-lived, because of the high mortality and the technical difficulties encountered. Bier himself realized that spinal anesthesia could not progress until a drug safer than cocaine was found. Since that time the history of spinal anesthesia has been characterized by alternating waves of popularity and distrust. The unfavorable early history has been the basis for much present day incredulity. However, the wave of enthusiasm which began in 1928, following the excellent work and reports of Pitkin of Teaneck, N. J., although its crest is past, has not receded one iota, as had all the others. Spinal anesthesia is here to stay, and is recognized as filling an important niche in the edifice of surgical technique. Though we owe much to Pitkin for having raised spinal anesthesia to a new high in the past decade, we would be amiss not to pay profound tribute to a man who has done even more than Pitkin since the turn of the century to standardize and lead the way in spinal anesthesia. In his four decades of surgical practice his clinic has administered over 40,000 spinal anesthetics. Beyond cavil and argument he is our greatest authority on spinal anesthesia. I refer to Professor W. Wayne Babcock of Temple University, Philadelphia.

A little more than ten years ago I became interested in spinal anesthesia. Since that time I have compiled statistics of over 5,000 spinal anesthetics, about one-third of them administered personally. The first hundred cases were the hardest. They would have been much more difficult and trying were it not for the fact that I was very fortunate, in 1928, in having on the anesthesia staff at the John Gaston Hospital a most competent and understanding coworker—a nurse anesthetist, Miss Annie Lee McDonald. Her keen observations, her sympathetic and expert handling of the apprehensive patient, as well as the apprehensive and sometimes almost panic-stricken operator, aided no little in the final formation of our methods of preoperative and anesthetic preparation of patients. Not only personally attractive to female as well as male patients, her pleasurable banter, I am sure, allayed many a real as well as imagined fear which must have coursed through the active mind of one undergoing one of the great crises of his life—a major operation. I almost disagree, at this point, with Maxson, who states, "I feel that the spinal anesthesia patient should preferably be watched by a well-trained medical man, who is qualified to administer any treatment or restorative measures that may be called for". The only treatment which stands out, during an operation under spinal anesthesia, is the dulcet note of a musical feminine voice pouring sweet words of comfort into the anxious brain of a husky man or a pretty miss. It is just too difficult to envision a fat, bald-headed man, with horn-rimmed glasses,

pouring sweet nothings into one's ear at any time—let alone at such a crisis in one's life.

Expert handling of the patient during the operation is absolutely essential to a successful anesthesia. The psychic shock which may ensue, due to improper or careless handling, may be the turning point in the final operative result in many major operations. Hence, personal as well as technical competence must be of the highest order. Today the well-trained graduate nurse anesthetist is well versed in the art of supervising spinal anesthesias. Not only is she in immediate charge of the patient's vital clinical signs, such as the pulse, the blood pressure, respiration and color, but also of the psyche. She knows that it is within her jurisdiction to prevent and allay fear reactions by a calm and gentle, but firm and tactful attention to the patient. She knows how to anticipate and prevent impending complications during the anesthesia.

During the years that I instructed the students in anesthesia, I compiled an outline of instructions for the nurse anesthetist. They comprise mainly a number of "Do's and Dont's." From time to time some were dropped and others added. They are as follows:

1. Visit your patient before the hour appointed for the operation. There is no more convincing method employed in any anesthesia than the preliminary visit of the anesthetist. After a very informal introduction, a few words of assurance that you will look after every need of the patient in the operating room, will raise the preoperative morale immeasurably and allay almost every fear. At this time the blood pressure is checked, as is the pulse, and the patient's general condition.

2. Be the first to greet the patient in the operating room. The sight of a familiar face and voice in the usual hustle and bustle of the average operating room outstrips in happy emotion the meeting of one's long lost beloved. Help the circulating nurse to place the patient upon the operating table.

3. Adjust the blood-pressure cuff before the anesthetic procedure begins. This will save a valuable minute or two of anesthesia time.

4. Anticipate every move of the surgeon as he administers the spinal anesthetic. Instruct the patient to turn in the proper position and then assist the patient in remaining in that position by gently holding the back of the neck and the lower thighs in complete ventro-flexion. Tell the patient that the "prep" solution will feel a little chilly, before he is aware of the cold tincture applied to his back. Before the hypodermic needle surprises, tell the patient that a little prick of the skin is all he will feel when the doctor injects the needle into the skin. In a well-administered spinal anesthetic this needle prick should be all the pain the patient will feel throughout the operation.

5. Note carefully the anesthetic agent, its amount, the interspace injected and the moment administration begins and ends. Tell the patient he will begin to notice some numbness in his lower extremities—that it is merely part of the anesthesia.

6. Help place the patient in the desired position as soon as the anesthetic injection is completed. Valuable minutes of anesthesia are saved here by a cooperative and helpful anesthetist. See that the arms are comfortably and securely placed under the draw sheet and the hands not locked in cuffs, but alongside of the buttocks. Cover the eyes and forehead with a soft towel that has been soaked in ice water and carefully wrung free of excess water.

See that the heels are on soft padding and the shoulders well protected from rigid shoulder braces.

7. Begin blood pressure, pulse and respiration readings while the patient is being prepared and draped. For the first thirty minutes, these should be checked every five minutes, routinely. In critically ill patients, these readings should come more often, also in patients where impending complications are threatening.

8. At this point judge your patient critically, and decide upon your course of psychic and vocal treatment. The majority of patients will fall into one of three groups. The first group will be well under the influence of the preliminary drugs and hypodermics, and, if not disturbed, will go to sleep soon after being turned upon the back. This group rarely has any anesthetic complications. Do your utmost to disturb them not. The second group will comprise those who are apprehensive and fearful—which apprehension and fear is sometimes augmented, instead of allayed, by preliminary drugs and narcotics. This is the group which will try your innermost capacities. They are usually talkative. Attempt to engage them in conversation on any topic outside of the operating room. If music is their interest and they hum a tune, encourage them to sing or whistle. A humming, singing or whistling patient never becomes nauseated. Some day music via ear phones will be commonplace for patients under spinal, regional or local anesthesia. The third group consists of the phlegmatic but interested individuals, particularly the young adult who actually seems enthusiastic about his operation and is apparently interested in all that is transpiring. Do not dampen the ardor of this group. Answer their questions discreetly and succinctly. Long answers confuse them. Remember that the preliminary drugs play a part in their bravado and ardor. Many in this group will ask to see the operation. If it is feasible, and a mirror handy, their wish should be complied with. In any of these groups, an occasional small piece of ice, or a sip of water will be relished as well as considered an unusual privilege.

9. Anticipate the common complications of the anesthesia:

(a) *Lowered blood pressure.* If the blood pressure drops below 100, a five degree Trendelenburg should first be instituted. If after three minutes the pressure drop is not interrupted, a further five degree drop is indicated. More than a ten degree Trendelenburg will not aid. If there are no concomitant signs along with a low or imperceptible blood pressure—and this is frequent—there should be no cause for anxiety. Nausea, vomiting and operative shock all contribute to a lowered blood pressure. Adrenalin, ephedrine, neosynephrin or pitressin must be used early to be efficacious in lowered blood pressure. Carbon dioxide and oxygen will always bring a ten to fifteen point rise if administered early.

(b) *Nausea.* This complication is common and may arise from two sources. The first is the complexity of drugs administered—the major one the anesthetic drug itself. However, we must keep in mind that morphine, atropine or scopolamine; a barbiturate; and novocain, ephedrine or neosynephrin have accumulated in the patient's blood within a very short time. Coupled with the toxicity of the anesthetic drug itself, it is surprising that we do not see more cases of nausea in our spinal anesthesias. The second source occurs during operation upon the abdominal viscera, when undue traction is made upon the mesenteries, or upon the

stomach or common duct. Usually, the judicious application of aromatic spirits of ammonia or oil of lemon plus a few deep breaths, will allay the ordinary nausea of the first group. Therapy is more difficult in the second group, but if the patient is advised to breathe deeply and quickly, the release of the traction thus brought about will allay the nausea more often than not. Carbon dioxide and oxygen may be used to good advantage here to stimulate deep breathing. Lowering of the head two or three degrees also helps in many cases.

(c) *Vomiting.* If nausea is not, or cannot be, controlled, the vomiting which ensues is an early complication occuring most frequently from the first source mentioned under nausea. To prevent vomiting is at times quite difficult. Occasional psychic vomiting is encountered in the patient who "knows" he or she is going to be sick no matter what anesthetic agent is employed. A gentle admonition helps considerably in this type. Carbon dioxide and oxygen along with an increase in the depth of the Trendelenburg position are our greatest aids.

(d) *Difficult respiration.* The most commonly encountered difficulty in respiration is found in the apprehensive individual who has lost the sensory as well as the motor control of his lower intercostal muscles. He begins to employ a sighing respiration and states in good loud tones, "I can't breathe!" As long as he continues to shout, "I can't breathe", all he will need is a few gentle words. In higher spinals we might employ oxygen with a small carbon dioxide component, early, in order to combat the loss of the higher intercostal musculature. If a serious complication occurs, such as a loss of diaphragmatic breathing, it means that enough anesthetic agent has ascended to the cervical region to paralyze the phrenic nerves. Here oxygen and carbon dioxide should be administered under pressure immediately and if this is not sufficient, artificial respiration is indicated and the surgeon so notified at once. However, this complication is so rare that we have seen it but once, and oxygen and carbon dioxide was sufficient to overcome the apparently complete respiratory paralysis. The perceptibly weakened voice and the appearance of cyanosis are indications of a higher than desired anesthesia and the surgeon should be notified at once. This can easily be accomplished without words, which may completely unnerve an apprehensive and already fearful patient.

(e) *Cardiovascular collapse.* This is as rare as respiratory paralysis. It may be due to an allergic reaction to the anesthetic drug; to the lumbar puncture itself; or to the operative procedure being carried out. All the classical signs of shock make their appearance—lowered blood pressure; shallow, rapid respiration; subnormal temperature; cold, clammy skin; profuse perspiration; pallor; and, in most cases, an anxious stare, if not unconsciousness. This picture calls for immediate heroic treatment:—the deep Trendelenburg position to preserve the blood supply to the vital centers; oxygen in copious quantities, under pressure; intravenous saline with 50 per cent glucose; and intracardiac adrenalin if the heartbeat becomes too weak for audible perception through the stethoscope.

10. "Dont's":
    (a) Don't talk of pain.
    (b) Don't talk of operations, illness or death.
    (c) Don't talk at all if the patient does not seem in a talkative mood.

(d) Don't ask, "Does it hurt?" The patient will surely tell you in no uncertain terms if it does.

(e) Don't be afraid to notify your surgeon from time to time of your patient's progress. Sign language or a code of your own making is the best method of communication.

(f) Don't give drugs during operations when other methods are of more assistance.

(g) Don't change postures too rapidly—especially from the Trendelenburg.

(h) Don't let the patient rule the head of the table. Be gentle but firm.

(i) Don't bother the suregon if the anesthetic begins to wear off in a long operation. Start the mildest supplemental anesthetic available. It will usually suffice.

(j) Don't fail to hyperventilate the lungs with carbon dioxide and oxygen for three to five minutes before removing the patient from the operating room. Instruct the patient to take deep breaths until all sensations return.

(k) Don't move your patient from a Trendelenburg stretcher to a level bed. Elevate the bed yourself if necessary.

(l) Never lose your equanimity. It is God's greatest gift to man and woman. In the operating room, it bedims the most powerful shafts of light.

SURGERY AND ANESTHESIA IN DIABETES MELLITUS

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Read at the meeting of the Southeastern Nurse Anesthetists' Assembly, held in Jacksonville, Fla., April 13 and 14, 1939.

This subject is so important and covers so many vital points that it would be foolhardy to try to cover all of them. I will discuss a few things that pertain to the diabetic patient as he faces the immediate operation and also the effect of various anesthetics on his carbohydrate metabolism.

Root has pointed out that one out of every two diabetics sooner or later requires surgery. Therefore the patient must be carefully instructed as to the care of himself so that he may avoid surgery if possible, and if not, so that he will understand that he should come in for advice and treatment early. For any infection, local or general, the diabetic patient cannot come in too early for advice and treatment.

If we are to be successful in surgical treatment of the diabetic we must use the same judgment and skill that we would use on any average patient, plus a profound knowledge of the problems peculiar to diabetes mellitus. Joslin has listed what he considers essential for the success of surgery, as follows: First, adequate control of the diabetes by diet and insulin prescribed on the basis of good laboratory data. Second, adequate treatment of infection, with bacteriological study as needed. Third, recognition and management of the

complications in the heart, arteries and kidneys. Fourth, exercise in bed to promote carbohydrate metabolism and to prevent embolism. Fifth, intimate medical and surgical cooperation. This latter point seems obvious, but it needs emphasis. I feel that an internist who understands diabetes should be in full control of the diabetes at all times and leave the surgical procedure entirely to the surgeon. Sixth, early surgical decision. Seventh, one-man surgery. Eighth, on the morning of the operation adjustment of the insulin; after operation, administration of regular insulin every four to six hours according to tests run on the blood and urine. Ninth, the giving of simple food such as gruel and orange juice so that the patient will get at least 150 grams of carbohydrate daily. Tenth, the avoiding of anesthetics which reduce the liver glycogen, such as ether.

Whenever it is possible the medical man should be given an opportunity to bring the diabetes under as good control as possible before the operation is scheduled. In a patient who can wait a few days or weeks, an ideal, or almost ideal, control should be obtained. This can be done by putting the patient on an accurately weighed out diet and sufficient insulin to hold the blood sugar level within a normal or nearly normal range. This is what we feel is most desirable because the patient is then much like the non-diabetic in his reactions to surgery. This means allowing an actual carbohydrate intake of about 150 grams a day and having less than 15 grams of sugar spill over into the urine during any 24-hour period. We wish to maintain a blood sugar level which is normal fasting and which does not exceed 200 milligrams per cent during the day. The urine should be free of acetone and the carbon dioxide-combining power of the blood should be within the normal range. By securing the above condition for a period of 48 hours, more or less, the glycogen depots can be fairly well replenished. It is most important to have the glycogen stores of the liver well filled because it means good protection for that organ and greater security to the patient. If we must hurry, six to ten hours should be given the internist, if possible, during which time large amounts of insulin can be administered. Glucose can be given as needed and fluids should be given liberally to correct dehydration and chloride imbalance. This may not completely control any acidosis which may be present but at least the patient would be a better risk with the insulin preventing further loss of glucose by abnormal channels; and the acidosis which would result from the failure of the glucose to burn the fats and proteins would be largely avoided. Also some glycogen would be stored and give added protection that could not be attained if operation were carried out immediately. If, however, it is necessary to proceed at once, then we must go ahead and treat the diabetes during the surgery by large amounts of insulin and fluids as needed; however, local or spinal anesthesia is the anesthesia of choice under these circumstances.

We feel that the patient should receive a feeding consisting of sufficient orange juice to allow an intake of 25 grams of glucose two to three hours preceding operation. This will usually carry the patient through any average operation. The insulin used should in most instances be protamine zinc insulin basically once daily, and regular insulin as needed to cover any spilling into the urine.

Protamine zinc insulin offers definite advantages in the management of these

patients. Root has stated that the cases so treated are much more secure and will cause the surgeon much less worry than patients treated with old insulin alone. Joslin lists the following advantages of protamine zinc insulin. First, its constant slow action when given before operation in the morning protects the patient against possible reaction during anesthesia, when the surgeon might not recognize the symptoms. In the New England Deaconess Hospital, no reaction has ever occurred during an operation where protamine zinc insulin had been used, but reactions have occurred with regular insulin. Second, the slow action means constant protection of liver function in that it allows the liver to form glycogen and prevents improper burning of fats and proteins which would produce acidosis. Third, with protamine zinc insulin large amounts of carbohydrate can be utilized before and after operation and it is particularly helpful if we have an associated hyperthyroidism, where large amounts of glycogen are required to protect liver function. They feel that the careful use of cyclopropane is very helpful in diabetes because of the high oxygen concentration used. Fourth, the danger of serious hypoglycemia following operation is lessened. They have had no serious reactions with protamine zinc insulin following operation. Wilder pointed out that the insensitivity to insulin so frequently seen after a major surgical operation is largely avoided when protamine zinc insulin is used. This has certainly been true in our experience.

It might be well to consider briefly here what we should look for in case we should have a hypoglycemic reaction during the operation or while the patient is under a general anesthetic. If local or spinal anesthesia is being used, the usual symptoms will be noted. The symptoms are hunger, weakness, nervousness, pallor or flushing, dilatation of pupils, profuse perspiration and increase in the blood pressure and pulse rate. Under a general anesthetic, the pallor or flushing, pupil changes and perspiration should serve as helpful guides. The hypoglycemia may be corrected by giving 10 to 20 cc. of 50 per cent glucose intravenously. These symptoms pertain only when regular insulin is used. Protamine zinc insulin rarely causes a reaction during operation. I know of no such instance. However, the symptoms of hypoglycemia resulting from it are headache, nausea and general malaise.

Mosenthal in discussing the effect of commonly used anesthetics on the carbohydrate metabolism states that chloroform and ether are very marked in their effects, while ethylene has only about 50 per cent as much effect as those mentioned. Large doses of morphine have about the same effect as ethylene. Cyclopropane, according to the report given by the Council on Pharmacy and Chemistry of the American Medical Association, produces only a temporary rise in the blood sugar of from 8 to 30 per cent. It produces little or no change in the carbon dioxide-combining power of the blood. Thirty diabetic patients were observed and controlled and no change in the carbon dioxide-combining power of the blood was noted. This means that cyclopropane has practically no effect on the acid-base balance even in those individuals having diabetes mellitus. Nitrous oxide, amytal, avertin and spinal anesthesia all have about the same effect, which is slight, on the carbohydrate metabolism. Long has listed the actual effects produced by anesthetics on the carbohydrate metabolism: First, inhibition of insulin activity. Second,

reduction of the glycogen of the liver. Third, reduction of the glycogen in the voluntary muscles and in the heart. Fourth, inhibition of the formation of glycogen from lactic acid in the muscles. Fifth, a breakdown of the lactic acid precursors in muscles yielding lactic acid, thus accounting for part of the acidosis.

The choice of the most suitable anesthetic and its proper administration are of the utmost importance to the patient with diabetes mellitus. It certainly seems obvious that whenever possible ether and chloroform should be avoided, and the general anesthetic of choice seems to be cyclopropane.

What other important factors do we need to consider? Mosenthal feels that four main points should be kept in mind and watched. The urine should be sugar-free, or nearly so, just preceding the operation and should be without acetone bodies. The patient should not be in danger of a reaction. Hyperglycemia should have been reduced to a point that the urine becomes sugar-free. Glycogen deficiency should be avoided whenever possible. Adequate glycogen stores are dependent upon an adequate carbohydrate intake without excessive loss through the urine. As for acidosis, the danger of mild acidosis is that if good management is not maintained fatal errors may occur and the patient die in twenty-four hours. In case of emergency, as has been stated, a few hours' preparation should be given if possible. Liberal amounts of insulin should be given and, if needed, carbohydrate intravenously, subcutaneously or by mouth.

We feel that a patient should receive 100 to 150 grams of carbohydrate on the day of operation, but that unless the operation is of undue length none need be given until the patient returns to his room. In case of a long operation, it is probably wise to give the patient 500 to 1000 cc. of 5 per cent glucose in normal saline intravenously, preceded by a hypodermic of insulin, giving about 1 unit for each 4 grams of sugar if the patient is taking protamine zinc insulin.

After the patient has been returned to his room glucose feedings by mouth or by hypodermic should be given so as to get in about 150 grams of carbohydrate for each 24-hour period, giving regular insulin in sufficient dosage to cover the amount of spilling into the urine. The protamine zinc insulin is kept up daily, but regular insulin is given only as indicated. By carefully following the urine sugar and keeping the urine free of acetone the convalescence is as uneventful as that of the non-diabetic patient and the patient may be assured of a well-healed wound. If control is poor the wound will probably not heal well. The postoperative control is usually not difficult, particularly when ether or chloroform has not been used. Protamine zinc insulin has simplified things a great deal.

Kidney infections are a particularly great hazard to the diabetic patient, and Root pointed out that they are particularly frequent following leg operations. This complication caused 19 per cent of the deaths following leg operations at the New England Deaconess Hospital over a period of several years; in other words, 19 per cent of all the fatal leg cases had serious kidney infections.

In conclusion, if the diabetes is well controlled by diet and insulin at the time of operation, the diabetic patient has little more to fear than the non-diabetic, always assuming, of course, that good care and control are maintained.

CYCLOPROPANE ANESTHESIA: A REPORT OF 2720 CASES

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Cyclopropane, described by von Freund in 1882 as trimethylene[1], is a colorless gas with a characteristic sweetish, pungent but not unpleasant odor. Lucas and Henderson of Toronto, Canada, first used it in 1929 on animals[2], and Waters and his associates used it on humans at the University of Wisconsin at Madison in 1930.[3] Since then it has been used by numerous investigators, research workers, and clinicians. Its popularity has increased rapidly despite the fact that it was accepted as a safe anesthetic agent by the Council on Pharmacy and Chemistry of the American Medical Association only in March, 1939. It is inflammable and explosive. The lower limits are the same as those for ether, but the upper limits are less[4]. The range of explosibility in air is from 3 to 8.5 per cent and with oxygen from 2.5 to 50 per cent[5].

Cyclopropane differs from other gaseous anesthetic agents in that the anesthetic-oxygen ratio is reversed—10 to 20 per cent of cyclopropane with 90 to 80 per cent of oxygen, up to the rarely and briefly used 40 per cent of cyclopropane and 60 per cent of oxygen.[6] Romberger points out, however, that nothing could be further from physiologic truth than that set percentage mixtures of cyclopropane-oxygen are indicative of definite levels of anesthesia.[7]

The number and kind of surgical procedures done under cyclopropane in the series studied are shown in the following table:

Read at the organization meeting of the Southeastern Assembly of Nurse Anesthetists, held in Jacksonville, Fla., April 13-15, 1939.

Neurosurgery	38
Plastic operations	63
Mastoidectomy	28
Thyroidectomy	101
Breast operations (major and minor)	89
Thoracic surgery	35
Heart operations	3
Diverticulum of the esophagus	2
Operations on the stomach	38
Gallbladder operations	105
Splenectomy	3
Appendectomy	552
Herniorrhaphy	137
Exploratory laparotomy	51
Removal of cyst of the mesentery	3
Intestinal surgery	89
Gynecological operations	
major	456
minor	346
Urological operations	
major	148
minor	78
Cesarean section	18
Rectal operations	118
Orthopedic operations	180
Amputations	10
Miscellaneous (abscesses, carbuncles and other minor surgery)	29
Total	2720

The ages of these patients ranged from three to eighty-seven years. The

youngest was a child of three years (rib resection following pneumonia and empyema), and the oldest patient was eighty-seven (amputation of the foot following a traumatic injury).

In this series the duration of the anesthesia ranged from five minutes for incision and drainage of abscess to seven hours for a laminectomy. The awakening from the short anesthesia was very prompt, the patient usually regaining almost immediate consciousness and orientation; on the other hand, the patients who had anesthesia of longer duration awakened in from five to ten minutes and most frequently dropped off to sleep again for varying lengths of time from a few minutes to several hours.

Of the 2720 patients anesthetized, 2,108 received cyclopropane-oxygen alone. Out of this 2108 cases, 410 had the advantage of novocain injected into the skin and muscle to produce further relaxation and obviate the necessity of too deep inhalation anesthesia. In the remaining 612 anesthesias some ether was added in amounts varying from five to one hundred and twenty cubic centimeters.

Early in this series cyclopropane was used for only the poorest surgical risks, because of the high cost of this gas when it first became available. As time went on, however, cyclopropane was used increasingly often in this clinic until we now use it for every anesthesia where the closed method is practicable and during which the use of no electro-surgical or x-ray unit is anticipated. This rules out most of our neurosurgical cases.

Premedication

Morphine and scopolamine has given better satisfaction than any of the other non-volatile drugs that we have used. For adults 1/8 to 1/3 grain of morphine with 1/300 to 1/100 grain of scopolamine, given one and a half hours previous to induction, is the premedication used most frequently. When possible these drugs are administered in fractional doses. One half of the estimated dosage is given one and a half hours before induction and the remaining half forty-five minutes after the first dose.

One of the barbiturates, such as nembutal (pentobarbital sodium) is often given to the patient at bedtime the night preceding the operation and is repeated one and a half hours before the induction of anesthesia. With the use of this premedication we have found that a lower concentration of cyclopropane may be used, especially during induction.

Technique of Administration

The first method used at this hospital for the administration of cyclopropane was the intermittent flow as recommended by Waters and his associates in 1934.[8] With this technique the breathing bag was partly filled with 3000 cubic centimeters of oxygen and cyclopropane was added at the rate of 300 to 400 cubic centimeters per minute, while at the same time 300 to 400 cubic centimeters per minute of oxygen was allowed to flow into the bag to take care of the metabolic needs of the patient. With this method it required three to five minutes to induce surgical anesthesia with the circle absorber. The soda lime was cut into the circuit only as needed to control the rate and volume of the respiration. After anesthesia had been established, cyclopropane in amounts of 100 to 300 cubic centimeters was added as needed to maintain the required depth of anesthesia. With this technique it was difficult to maintain an even, smooth anesthesia, for the patient was first under

deep and then light anesthesia. With the continuous flow of cyclopropane as described by Burford[9], and which is now being used at Emory University Hospital, this uneven anesthesia does not occur. The induction with this method is identical with that of the intermittent flow which is still used by many anesthetists; but after surgical anesthesia has once been established, it may be maintained with a continuous flow of cyclopropane from ten to fifty cubic centimeters per minute, with a flow of oxygen sufficient to meet the metabolic requirements of the patient.

The effect on the circulation noted during these anesthesias showed that two hundred and forty-four patients had arrhythmias, and these irregularities were evidenced in patients who were given only cyclopropane-oxygen. These arrhythmias occurred in various stages of the anesthesia but most frequently when the patient had been pushed well into the third stage. Arrhythmia occurred in only one patient during the induction stage, but five evidenced marked irregularity when the patient was too lightly anesthetized at the time traction was made on the mesentery in delivering the cecum for removal of the appendix. In these latter cases cessation of the trauma with deepening of the anesthesia brought the pulse back to a rhythmic beat. Nine of these patients had hyperthyroidism and irregularity was present preoperatively. There were three patients in this series who showed such marked stimulation to the vagus nerve, even during the first ninety seconds of induction, that it was thought best to substitute another anesthetic agent. The pulse rate in one of these three patients dropped from ninety-six to twenty-eight in a period of two and a half minutes after the cyclopropane was started. The other two patients did not show a drop as sharp or as rapid as this, but the pulse of neither patient could be kept above thirty-six with the use of cyclopropane.

In eight hundred and thirty-five of these cyclopropane anesthesias the blood pressure rose from 10 to 30 millimeters of mercury. This increase occurred at the beginning of the anesthesia with the systolic pressure showing the first increase, followed in from five to fifteen minutes by a rise in the diastolic pressure. Rowbotham is of the opinion that both rises are proportional to the depth of anesthesia.[10] Retention of carbon dioxide, anoxemia, or reflexes which arise from the sensory stimulation of light anesthesia are all contributing factors in causing a rise in blood pressure and are more often the offenders in this respect than is the anesthetic agent itself. In the remaining eighteen hundred and eighty-five cases there was no change in blood pressure that could be attributed to cyclopropane.

Respiratory stimulation was not noted in this series of anesthesias. The depression shown was slight, and the rate and depth of the respiratory excursions were easily controlled with the use of the soda lime filter.

Postoperative Complications

Postoperative pulmonary complications which occurred following this series included eight cases of atelectasis and one of pneumonia, as follows:

Group I	
Pneumonia	*Cases*
Appendectomy	1
Group II	
Atelectasis	
Thyroidectomy	1
Stomach resection	1
Gastroenterostomy	1
Repair of duodenal ulcer	1

Operation for intussusception	1
Cholecystectomy	2
Bladder resection	1
Total	9

The earliest atelectatic condition developed eight hours following anesthesia and the latest one seventy-two hours postoperatively. In one case no treatment at all was instituted and the condition cleared up within thirteen hours. Inhalations of carbon dioxide 15 per cent and oxygen 85 per cent proved an effective treatment in six instances, but in one case it was necessary to resort to bronchoscopy with suction for complete clearing of the mucus plug causing the collapse. In group I bronchial pneumonia developed almost immediately following appendectomy, but early treatment proved effective and convalescence and hospitalization were lengthened only a few days. The patients in both groups had only cyclopropane-oxygen anesthesia, and there were no fatalities.

Postoperative Nausea and Vomiting

More than 6 hours' duration: 115, or 5%
One to 6 hours' duration: 272, or 10%
One to three times during first hour postoperative: 363, or 13%
Nausea without emesis: 217, or 8%
No nausea or vomiting: 1,753, or 64%

Death Under Anesthesia

One death occurred under anesthesia.

Case Report

Mr. C. admitted on urological service: poorly nourished white, male, age 63.

Preoperative Diagnosis

(1) Benign prostatic hypertrophy
(2) Generalized arteriosclerosis
(3) Arteriosclerotic heart disease
(4) Lymphatic leukemia.

The heart was irregular, enlarged, and sounds were of poor quality. The patient had had some degree of decompensation for a number of years but had been able to carry on his work, which was that of a miller, until his present illness, which was of three weeks' duration prior to his admission to the hospital on February 18th. Blood count showed 300,000 white cells with a hemoglobin of 53 per cent. On February 25th the patient was given a transfusion of 510 cc. of whole blood, and on the following day his white cell count was 250,000, with 67 per cent hemoglobin. Since this patient had a complete blockage of the urethra, a suprapubic cystotomy became necessary. On March 1st, one hour before the patient was brought to the operating room, a hypodermic injection of 1/4 grain of morphine with 1/150 grain of atropine was administered. Because deep anesthesia would not be necessary to produce the required degree of relaxation for this operation, cyclopropane was considered the anesthetic agent of choice. Ten minutes after the patient's arrival in the surgery, the anesthesia was started cautiously with cyclopropane-oxygen. At this time the pulse was 132 and respirations 18 per minute. Seven minutes later, when the incision was made, the pulse was 100 and rhythmic,—respirations 20,—with blood pressure systolic 105, diastolic 50. The patient tolerated the anesthesia and the operation remarkably well,—pulse and respiration remaining constant at 100 and 20 respectively. The systolic pressure rose to 110 but the diastolic remained at 50. At the end of the operation, when the skin was being sutured, the patient's heart, without change in rate or rhythm, suddenly ceased to beat, although he continued to breathe for the following sixty seconds. Efforts were continued for one hour to resuscitate the patient by means of stimulants, artificial respiration, and adrenalin into

the heart muscle, but with no success. An autopsy was immediately performed and the report of the pathologist was as follows:

Anatomical Diagnosis:

1. Myocardial failure with extreme dilatation of the right heart. This was due possibly to either long-standing arteriosclerotic involvement or leukemic infiltration of the heart muscle.
2. Diffuse fibrosis of the liver.
3. Splenomegaly.
4. Retention cyst of the pancreas.
5. Retention cyst of the left kidney.
6. Bilateral acute pyelitis and ureteritis.
7. Hypertrophy and dilation of the urinary bladder with cystitis.
8. Localized benign prostatic hypertrophy and hyperplasia with obstruction of the posterior urethra.
9. Moderate bilateral passive congestion of the lungs.
10. Advanced atherosclerosis with calcification of the aortic coronary system.

Diagnosis: 1. Microscopic examination confirms anatomical diagnosis, with the following additions:

Widespread leukemic infiltration of the liver, kidneys and heart muscle.

Lymph node and splenic changes characteristic of leukemia.

Summary

Cyclopropane is a safe, non-irritating, highly potent, and controllable anesthetic agent which can be used in almost every type of case and in the extremes of age. The technique of administration is radically different from that of nitrous oxide and ethylene in that a much higher percentage of oxygen is used.

It has now been accepted as a safe anesthetic by the Council on Pharmacy and Chemistry of the American Medical Association.

Cyclopropane is explosive in the range of mixtures used for anesthesia.

In this series cyclopropane was administered to 2720 patients. Patients or operative procedures were not selected. Morphine and scopolamine combined with small doses of the barbiturates has proved satisfactory for premedication.

The chief toxic effect of cyclopropane appears to be a temporary disturbance of the heart. The blood pressure is slightly elevated and the pulse is slowed. This usually occurs as a result of deep anesthesia. Postoperative pulmonary complications—9 out of 2720 cases, or .3%.

One death occurred under anesthesia in this series of 2720 cases.

The advantages of cyclopropane over other anesthetic agents—the high percentage of oxygen which can be administered; quiet and pleasant induction; rapidity of action; low toxicity; stable and relaxing anesthesia.

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LARYNGOSPASM AND ITS RELATION TO ANESTHESIA

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Read at the second annual meeting of the Michigan Association of Nurse Anesthetists, held in Detroit, Mich., June 3, 1939.

The larynx serves as a valve for the entire respiratory system; it can close the airway partly or completely. For this reason the larynx assumes great importance in anesthesia of any type. It receives its innervation chiefly from the recurrent laryngeal nerve; thus it is closely related to the central nervous system and receives many reflex stimuli from distant parts of the body. Its own sensory nerve supply is very complete so that in the normal state it responds markedly to any form of irritation. The larynx responds to stimuli, either direct or reflexly, by going into spasm, approximating the cords, and leading to partly or completely obstructed respiration.

The etiology of laryngospasm may be classified under two headings:

(1) Spasm due to direct irritation of the vocal cords;

(2) Spasm of a reflex nature due to trauma to some more or less distant part of the body.

(1) The irritability of the larynx is a relative state, depending upon the patient's need for respiration (oxygen). If the need for respiration is great, the irritability of the larynx is greatly reduced. Such a condition may be brought about by a period of respiratory obstruction. I recall a case of postoperative tracheal collapse following a thyroidectomy. The patient was conscious but in great need of oxygen. As the condition was rapidly becoming worse, it was decided to place an intratracheal catheter in position. The catheter was inserted under direct vision without anesthesia and at no time was there any tendency for the cords to go into spasm. In this respect it is to be remembered that, because of this reduced irritability of the larynx following a period of respiratory obstruction, there is great danger of aspirating material into the pharynx when respirations are again initiated.

Laryngospasm due to direct irrita-

tion of the laryngeal tissues usually occurs in the first or second stages or in the first plane of the third stage of anesthesia (Guedel classification). It is usually absent below the level of the first plane; however, in second plane anesthesia a spasm may develop if a foreign body is suddenly introduced into the trachea. An intratracheal catheter will often have this effect and the resulting spasm may last a minute or two. The approximation of the cords may be either complete or incomplete, depending upon the degree of irritation and upon the level of irritability of the larynx. The spasm will continue until anoxemia is well advanced and the carbon dioxide level is elevated to a considerable extent. Respiration will then commence, usually shallow at first, then growing deeper as the relaxation of the cords progresses.

Frequently this condition is brought about by the sudden increase in concentration of an inhalation anesthetic agent. In this case the anesthetic acts as an irritant to the laryngeal epithelium. The resultant obstruction may develop during several respiratory cycles or it may come on very suddenly. Changing from drop ether to pharyngeal ether before the patient is deep enough often causes the condition.

Treatment is directed toward the removal of the irritation, and includes the introduction of oxygen into the lungs. Usually, as soon as the carbon dioxide level rises high enough, respiration starts spontaneously. It must be remembered that if the respiratory centers are being depressed by anoxia at a rate greater than the stimulation due to the increasing carbon dioxide, then the patient may never breathe spontaneously. The obvious remedy for this situation is artificial respiration to supply oxygen.

(2) The spasm of reflex origin may be brought about by dilating the anal or vaginal sphincter, trauma to the recurrent laryngeal nerve, or by traction upon abdominal viscera. If traction is exerted upon the viscera, an inspiratory stridor develops, becoming very annoying to the surgeon and embarrassing to the anesthetist. Such stridor may occur at almost any level of anesthesia; it is usually less pronounced in deep anesthesia. Complete obstruction to respiration is unusual. However, if the traction is suddenly and strongly applied to the viscera there may be a complete closure of the glottis, the condition lasting for a minute or longer.

There is no single manner of treating the condition with the exception of passing an intratracheal catheter. In the hands of an experienced person the passage of an intratracheal catheter is a justifiable means of treatment. Sometimes deepening the level of anesthesia will help. Increasing the depth of respiration by adding carbon dioxide to the inspired mixture may eliminate the difficulty but it is just as likely to make it worse. Increasing the amount of positive pressure expands the larynx and carries the cords away from each other. This procedure will often avoid the difficulty entirely or will reduce it greatly. A still more satisfactory method of treatment, applicable only with the more potent agents, consists of the introduction of about 50 per cent helium into the mixture. This lightens the specific gravity of the mixture to the point where the cords cannot vibrate the gas and produce sound and, for the same reason, it allows the patient to be ventilated adequately in spite of a decreased airway. Combining the use of helium and increased positive pressure will eliminate reflex laryngospasm in about 90 per cent of the cases.

GAS ANESTHESIA

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Abstract of paper presented at the meeting of the Minnesota Nurse Anesthetists Association, May 26, 1939, St. Paul, Minnesota.

This presentation concerns some important features of gas anesthesia from the standpoint of preoperative medication, physiologic phenomena associated with the administration of the majority of inhalation anesthetic agents and supportive measures for the patient during anesthesia.

Morphine sulfate is administered to patients usually because it promotes rest and raises the patient's threshold for pain, and also it enhances the effect of the majority of soporific drugs, such as bromides and barbiturates. Various drugs of the atropine series such as atropine sulfate, belladonna and scopolamine, are used almost routinely in order to inhibit the secretion of mucus during inhalation anesthesia and to antagonize the depressant action of morphine on metabolism. One should administer small doses of drugs preoperatively and repeat them whenever necessary in certain cases in order to produce or maintain the desired pharmacologic effect. I do not believe that it is possible to state any specific dosage that would be applicable for all individuals because the basal metabolic rates of patients vary so widely, and on this basis it is impossible to state what the reaction of a given individual will be to the administration of a certain dose of a drug.

The mechanism of inhalation anesthesia is tremendously complex and depends on many factors; some of the most important of these are the physiologic laws of gas and vapors and the anatomic, physiologic and chemical considerations incident to respiration. The rate of diffusion of the anesthetic agent into the blood stream is rapid at first, depending somewhat, of course, on the area of alveolar membrane exposed to the gas and on the rapidity of the pulmonary circulation. As the concentration rises in the blood, the rate of diffusion of the anesthetic agent from the alveoli decreases and an equilibrium is established between the partial pressure of the gas in the alveoli and that in the blood. Conversely, when administration of the anesthetic agent is discontinued, a reversal of the process occurs; at first there is a rapid elimination of the anesthetic agent from the tissues into the blood and from the blood into the alveoli of the lungs. Gradually, this phenomenon is followed by a slower elimination of the anesthetic agent.

The necessity for maintaining adequate air passages during anesthesia and the various types of stridor (laryngeal spasm) have been emphasized. Rather extensive consideration was given to the interpretation of various types of depression of respiration and the importance of realizing the physiologic action of the normal respiratory center, the effect of various narcotic agents and certain metabolic stimulants such as carbon dioxide on respiration, and the resultant action of these agents on the character of respiration. It has been emphasized that, in the presence of moderate to severe depression of respiration, treatment of the condition consists in immediate administration of

sufficient oxygen to rejuvenate the respiratory center in the medulla.

It was emphasized further that the respiratory signs of anesthesia are vitally important and deserve as much consideration as any one physiologic sign that may be demonstrated during inhalation anesthesia. Except in certain instances, vasomotor and cardiovascular aberrations usually occur almost simultaneously with respiratory changes and inadequacies, and one should be alert to detect changes in blood pressure, alterations in pulse rate and other signs of possible impending shock.

Various supportive measures which may prove valuable for the benefit of the patient during the course of inhalation anesthesia have been considered; the importance of utilizing intravenous fluids in an effort to support the volume of circulating blood and to allow the heart a sufficient medium on which to contract have been stressed. Such agents as physiologic solutions of sodium chloride with or without glucose, solutions of acacia or whole blood are the usual intravenous fluids which serve to support the volume of circulating blood and which influence directly the character of the blood pressure. The advisability of using vasoconstrictor agents such as epinephrine has been considered in relation to capillary paralysis and impending shock. Various factors, other than the anesthetic agent itself, which influence or hasten so-called surgical shock were dealt with, such as hemorrhage, loss of body heat, sweating, trauma to tissues and lengthy surgical procedures.

ANESTHESIA IN THORACIC SURGERY

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Read at the sixth annual meeting of the New York Association of Nurse Anesthetists, held in New York, May 17-19, 1939.

The more recent advances in anesthetic equipment, the development of new gases with greater margins of safety, and most important of all, the better training of anesthetists, have enabled thoracic surgery to make tremendous strides during the past fifteen years. To this more than to any other single factor we owe the rapid progress of thoracic surgery.

In the selection of the ideal anesthetic certain fundamental requirements must be fulfilled; first, adequate anesthesia, combined with a high oxygenation of the blood, must be obtained; second, there must be provision for removing blood or secretions from the trachea; third, the anesthetist must have control of lung volume; that is, inflation or deflation of the lung should be possible if required by the operator; fourth, in order to facilitate the surgeon's technical approach, respiratory movements must be kept at a minimum; and, finally, physiological disturbances to the patient should be avoided.

To emphasize the importance of these prerequisites, we need only review those difficulties peculiar to patients on whom thoracic operations are to be

performed. The patients, usually chronically ill, are in relatively poor physical condition. Moreover, it is well known that they also show a marked intolerance for slight degrees of anoxemia.

By virtue of the fact that the pathologic process itself is situated within the lung, the anesthetist's problems are obviously more complicated. Thus, in these patients there is a great tendency to cough. There is increased secretion of both mucus and pus. The actual surface of the lung available for the absorption of both the anesthetic and oxygen is reduced, and the position of the patient on the operating table frequently interferes with the administration of the anesthetic.

Finally, those operations such as lobectomy and pneumonectomy, in which the pleural cavity is open, present added problems. Considerable embarrassment of respiration and circulation may result from merely opening the chest. This is most probable when the lung is free and the mediastinum as a result is not fixed. The condition of mediastinal flutter is instituted when the chest is opened and the atmospheric pressure pushes the mediastinum into the unopened pleural cavity. An immediate anoxemia develops and in an effort to overcome this, the patient's respiratory mechanism institutes strenuous respiratory movements with the result that the mediastinum is involved in a rapid to and fro motion. This motion prevents proper filling of the heart and leads to failure of the circulation. Fortunately, this complication is not common and with our present methods of pressure anesthesia, it can be prevented or satisfactorily controlled.

With this discussion in mind we may now summarize the advantages and disadvantages of the various available anesthetics. No matter what anesthetic is selected, its administration by the intratracheal route is as a rule the most satisfactory. An intratracheal tube insures a clear airway, since it prevents obstruction by spasm of the glottis or by retained secretions. Furthermore, the tracheobronchial tree is easily aspirated and infection of the good lung by retained secretions is thereby prevented. The one objection that may be raised is the difficulty in the insertion of the intratracheal tube. Certainly, a well-trained anesthetist should be familiar with intratracheal intubation, since at some time the occasion will arise when immediate intubation will be required as a life-saving measure.

Adequate and safe anesthesia with nitrous oxide without some degree of cyanosis is practically impossible for thoracic surgery, because of the high percentage of nitrous oxide required to produce anesthesia. To be sure, when used in combination with ether, it serves its purpose in the hands of those particularly adept in its administration.

Ether is a satisfactory anesthetic and the only objection to it is its irritating effect on the tracheobronchial tree. Unfortunately, in most thoracic cases the secretions of the pulmonary tree are already abnormally large and the additional irritation of ether is undesirable.

Ethylene better suits the requirements, as satisfactory anesthesia can be obtained with concentration of 80 to 85 per cent of the gas.

Cyclopropane, however, is the anesthetic of choice. A concentration of only 20 to 25 per cent of the gas provides adequate anesthesia. Thus, a high oxygenation of the blood stream can be maintained and, also a quiet lung—a boon to the operator. In addi-

tion, rapid reaction with early recovery of the cough reflex is an advantage of cyclopropane. The one objection to it—a real one—is its highly explosive nature. That this is no little hazard is attested to by the fact that within the past few months there have been two explosions in clinics on the eastern seaboard. However, its advantages far outweigh this single hazard when used in properly equipped operating rooms.

I should now like to outline for you the anesthetics selected for the various types of thoracic operations performed in this clinic.

Preoperative medication of morphine and atropine is given to all patients who are to have general anesthesia. Recently, the use of the barbiturates instead of morphine has been advocated for preoperative medication for those patients who are to receive cyclopropane. By this regimé the cardiac and respiratory arrhythmias sometimes seen during cyclopropane anesthesia are supposedly prevented. Morphine only is used for those patients on whom local anesthesia is contemplated.

For the drainage of lung abscess and empyema local anesthesia is used exclusively except in the very young, when cyclopropane is used.

In thoracoplasty the majority of the patients will tolerate local anesthesia, which is preferred. Recently, we have been using avertin as a basal anesthetic. We believe that at most 90 milligrams of avertin per kilogram of body weight should be given, and for the frail and undernourished patient no more than 80 milligrams per kilogram. With the use of these smaller amounts it is frequently necessary to administer a small amount of inhalation anesthetic during the last stage of the operation.

For operations upon the heart, ether is used exclusively, administered on occasion intratracheally. Ether directly stimulates the myocardium and does not tend to raise the blood pressure as do the various gas anesthetics. In lobectomy, pneumonectomy and in the removal of mediastinal tumors, intratracheal cyclopropane anesthesia is the anesthetic of choice. The carbon dioxide filter is used in conjunction with a rebreathing apparatus. After the chest is open the anesthetic is administered under a pressure varying from 6 to 10 millimeters of mercury, which provides smooth, quiet respirations and a high degree of oxygenation of the blood stream.

In conclusion, I should like to reiterate that, in thoracic surgery, anesthesia is of greater importance in determining the outcome of the operation than in any other branch of surgery. Although I have emphasized our preference for intratracheal cyclopropane anesthesia in open pleural operations, I think that in the long run the best anesthetic is the one that the anesthetist can administer most competently. However, although the skill and ability of the anesthetist is more important than the kind of anesthetic, we should not neglect the advantages offered by each of the special agents at our disposal.

ANALGESIA IN LABOR

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Read at the sixth annual meeting of the New York Association of Nurse Anesthetists, held in New York City, May 17-19, 1939.

History

The large amount of experimental work done on animals to insure accuracy of technique for the injection of ether and oil per rectum was completed in 1912 and 1913. All of this investigation was conducted under the immediate supervision of Professor Wallace of the Pharmacological Department of New York University. Experiments were made in the laboratory of the College of the City of New York, under the supervision of the late Professor Charles Baskerville, as to the comparison of the rate of evaporation of ether from different mixtures of ether and oil and from the same per cent mixtures of different oils and ethers. It was found, after thousands of experiments, that the rate of evaporation remained constant in spite of the changing amount of ether in the oil. William H. Park, in the laboratories of the Department of Health of New York City, determined the bactericidal action of the ether-oil mixtures against the bacillus coli. It was found that practically all bacilli coli were killed in five to fifteen minutes. Since infection by the colon bacillus is a factor to be reckoned with in any surgical operation, this is most important. Thus it will be seen that this method of anesthesia was most thoroughly tested before being tried upon human beings.

The safe administration to a human being of any anesthetic per rectum was first publicly and successfully demonstrated by the administration of ether and oil in 1913. In developing the oil-ether technique for surgery, it was noted that two and a half ounces (75 cc.) of ether per rectum never produced sleep in the average adult, but that analgesia quite often resulted. This observation led quite naturally to the development of obstetrical analgesia, where the mother must be freed from pain but must retain sufficient consciousness to obey the directions of the obstetrician. This method was developed at the Lying-In Hospital of New York City, in 1923.

At that time three to four hundred confinements, or over, occurred in this hospital each month. An agreement was made with Asa B. Davis, the Surgeon-in-Chief, whereby the writer was to attempt to devise a method so simple that it required neither specialized technique, unusual equipment, nor trained personnel; that could be used either in the home or in the hospital by any physician, in an entirely empirical manner; to employ only drugs in common use, so that any pharmacist or physician could readily prepare them; and to publish results. After seven years of trial, it was possible for the writer to report twenty thousand cases without injury to either mother or baby, occurring in this and in three other hospitals.

Judging from letters received from all parts of the United States, the method seems to be quite universally used; and since the author's report in 1930,[1] the number confined with this method and C. O. McCormick's modification of this method is estimated at

well over one hundred thousand. In eighty-five to ninety-five per cent of the cases, it is found to be a satisfactory analgesic, which affords amnesia as well as analgesia. There is also the added advantage in that it is not necessary for the physician to be present when the oil-ether is administered, nor does he have to be in constant attendance.

The method is relatively inexpensive, and affords an excellent preliminary to a cesarean section under local anesthesia. Mental and physical shock are lessened for the mother, and this form of analgesia is available to practically every woman in labor.

Nitrous Oxide—A Dangerous Anesthetic

Notwithstanding the proved value of ether-oil as an analgesic, there are many who still consider that nitrous oxide is the best and safest agent to use in obstetrics. This is contrary to the facts published by Courville[2] and by Lowenburg and Zbinden, "The Destruction of the Cerebral Cortex Following Nitrous Oxide-Oxygen Anesthesia."[3] A few cases quoted from their papers will be sufficient.

Case 1. Girl, five years of age; right mastoidectomy under nitrous oxide-oxygen anesthesia lasting one hour and a half. No untoward incidents during the operation; color good, pulse, respiration and blood pressure normal at conclusion of operation. The child was breathing satisfactorily, but failed to regain consciousness and died seven and a half hours after the induction of anesthesia.

Case 2. Nitrous oxide-oxygen anesthesia for delivery and perineal repair. Respiratory failure under the anesthetic. Generalized convulsions, muscular twitchings and deepening coma. Death after forty-three hours. Autopsy.

Case 3. Administration of nitrous oxide-oxygen supplementing spinal anesthesia, for hysterectomy. Continued coma. Diffuse minor motor manifestations. Survival period five days. Autopsy.

Case 4. Nitrous oxide-oxygen-ether for perineorraphy and repair after normal delivery. Irregular respiratory movements without cyanosis during anesthesia. Localized and generalized convulsions and coma. Temporary improvement followed by decline and death. Survival period six and a half days.

Case 5. Respiratory irregularities under nitrous oxide-oxygen anesthesia for curettage of the uterus. Coma followed by delirium. Septicemia. Death nineteen days later. Autopsy.

Case 6. Nitrous oxide anesthesia for resection of fallopian tube (ectopic pregnancy). Incomplete recovery with residual parkinsonian syndrome. Survival with mental defect. Committed to a mental hospital.

Case 7. Nitrous oxide-oxygen-ether anesthesia for repair of perineal laceration after precipitate delivery. Cyanosis and respiratory failure. Generalized convulsions followed by state of restless delirium. Recovery after transient aphasia, apraxia and visual disturbances.

In discussion, the authors state: "The harmful effects of the nitrous oxide-oxygen anesthesia upon the brain may be due to two factors. First, anoxemia due to low oxygen content of the blood, or second, toxic effects of the gas."[3] The authors seem to think the pathology here is due more to the toxic effect of the gas than to anoxemia. Many thousands of cases are anesthetized daily with nitrous oxide-oxygen anesthesia without ill effects. These cases, however, are sufficient to compel us to use extreme caution, and to sup-

plement the anesthetic with, or change it to ethylene, whenever possible.

The advantages of ethylene over nitrous oxide are: 1. More oxygen can be used with this gas than with nitrous oxide while maintaining the same degree of anesthesia; 2. Absence of sweating, thus conserving energy; 3. Absence of asphyxia, and hence greater safety, with less danger to both mother and baby of pathological changes; 4. Deeper anesthesia, and more complete relaxation. Small amounts of ether may be added to the ethylene as indicated, if necessary. I do not mean that nitrous oxide should be excluded as an anesthetic, for, when used in sequence and combination with ethylene or ether, and with larger quantities of oxygen than usual, it is safe. The author, however, is firmly convinced that the routine use of nitrous oxide alone should be discontinued.

Analgesia, Properly Administered, Is Beneficial to Both Mother and Baby

The principal objection of obstetricians up to the present time, to any method of anesthesia, has been the possibility of harm to the baby. That this objection is unwarranted is proven by a paper recently published by Cole.[4] In fact, a careful reading of his paper would seem to indicate that a safe, practical method for the relief of pain in childbirth is now obligatory. I quote extensively from his paper. "Whatever the explanation, the effect seems so definite as to leave little doubt, that ether given to the mother tends to reduce birth shock in the baby. The more ether the mother received, the less weight the baby lost after birth, and the more rapid the recovery of the child. When *no* anesthetic was given, the maximum loss was 5.53 per cent and the babies were still 2.37 per cent below weight on the eighth day."

Also, "It has been estimated that the baby receives from one to two ounces more blood (a very considerable amount to a newborn) when the cord is *not* tied until after pulsation stops than when it is tied at once. The longer the time that elapsed, the less weight the babies lost. Inasmuch as blood volume is one of the important factors in the determination of shock, it is easily conceivable that the loss of blood by the early tying of the cord might tend to increase an existing tendency to shock."

In conclusion, he states: "The evidence presented tends to confirm the idea that the *normal* newborn (i.e., no anesthetic) is in a state of mild shock as a result of the trauma of labor. In general, factors which tend to retard or ease the second state of labor seem to be favorable to the child."

It is true, none the less, that, if the mother does not receive the normal amount of oxygen at all times while under the anesthetic, any anoxemia produced either by inhalation ether, or by nitrous oxide, may, and sometimes does, result in the asphyxiation of the baby without injury to the mother. Rectal ether, however, makes possible the inhalation of the normal supply of atmospheric oxygen, a supply which may be increased by the anesthetist, if necessary, without interfering with the analgesia.

A Safe Method of Anesthesia for Use in Obstetrics

The usual custom of the author is to give a constant and extra supply of oxygen by the vapor mask at *all* times. Ethylene or ether can be added in such proportion that all pain is abolished during actual delivery. Immediately after delivery, the anesthetic should be discontinued, and oxygen with ten per cent of carbon dioxide given until pul-

sation ceases, when the cord is tied. Anesthesia may again be given for any repair, and then oxygen until all reflexes are present.

Dr. C. O. McCormick has modified the Gwathmey technique to improve the simplicity and safety of the oil-ether technique in obstetrics.[5] He eliminates the hypodermics and gives pentobarbital sodium by mouth. According to Bushnell, this barbiturate has twice the toxicity of barbital, 5.5 times its efficiency and 2.7 times its safety.[6] Destroyed in the liver (?), this barbiturate has no discernible effect upon the fetus in utero, or upon the new born infant. The fatal dose of pentobarbital sodium is fifteen to thirty times the therapeutic dose.

Quinine stimulates and continues the contractions of the uterus when labor pains start, but in the dosage used (20 grains), it is ineffective in initiating or producing premature labor. This dosage is six times removed from the fatal dose of 120 grains (8 grams). Recovery has been known to follow the administration of 480 grains. Moore of Portland, Maine, has used 30 grains in the formula over five hundred times with no ill effects to mother or baby.[7] Clinical experience proves that it is practically harmless in the usual twenty-grain amounts, that it will intensify weak labor pains and prevent delayed labor. The formula now used is:[8] Ether, 2½ ounces (75 cc.); Quinine alkaloid, 20 grains (1.3 grams); Alcohol, 45 minims (3 cc.); Paraldehyle, 2 drachms (8 cc.); Liquid petrolatum or olive oil, 4 ounces (120 cc.) This should be thoroughly mixed before administration. The technique is so well known that we will not go into detail here.

In the opinion of the writer, oxygen should be administered to the mother, or the mother placed in an oxygen tent, as soon as labor begins, and continued throughout, and the necessary anesthetics added as indicated during the progress of labor. The conception that the "normal" new born infant may be in a state of mild shock is new. If such a conception proves to be correct, it should greatly modify not only our routine care of new born babies, but many obstetrical procedures. Again quoting Cole[4]: "The function of labor is to produce healthy children. True progress in obstetrics should certainly be as much concerned with insuring the baby's safe passage through the birth canal as with making labor more endurable for the mother: ... In hospital practice, about four per cent of the new born babies are either still-born or die in the first week of life. More than half of these are due to accidents of labor, especially cerebral injury, as asphyxia..... A very large proportion of the inmates of public institutions for the mentally or physically handicapped are cases resulting from birth injury. .... Labor in the human is a quite different problem from that in even the largest of the mammals because of the large size of the infant's head and the disproportion between it and the mother's pelvis. It has been suggested that the amount of trauma to the head which is necessary even under the most ideal conditions is sufficient to produce a considerable degree of shock in the infant."

The marked reduction in the weight loss of the group receiving anesthesia, coupled with their very good recovery, suggests a slow, gradual progress of the child through the birth canal, which tends to minimize the trauma to the brain.

As for the effect of ether on the weight curves of the baby, when administered to the mother for over one hour, the maximum loss of weight was

4 per cent, and the weight at the eighth day was plus 58 per cent. From the data given, there seems little question but that anesthesia is beneficial to both the mother and baby, if properly administered.

A New Modification in the Rectal Administration of Ether

Lastly, there is the extremely important discovery of F. E. Guntrip, who uses ether mixed with latex[9]. This will increase the ease and safety of the administration of ether per rectum, for it reduces the volume by one-half, a reduction which is of very great importance in obstetrics. When placed on the market under the name "Lathesia," it will come ready prepared in the usual formula, and will be much cheaper than the usual ether-oil mixture. This lower cost is important when large quantities are used.

Conclusions

For the obstetrician, the paper of W. C. C. Cole, "Obstetrical Influences on the Weight Curve of the New Born",[4] is the most important paper published in the last few years. It has been considered up to this time that the loss in weight immediately following birth was physiological. It would now seem that this weight loss is pathological, and can be avoided by the administration of a suitable analgesic to the mother. This is especially interesting to those using ether per rectum. A faint trace of ether is noticeable upon the breath of the new born. This would indicate that the brain is protected while passing through the birth canal. The fact that the infant whose mother is anesthetized does not lose weight in comparison to the baby whose mother is unprotected by an anesthetic during labor is most important. The paper of C. B. Courville[2] which describes the ill effects of nitrous oxide upon the cerebrum after variable times is also of very great interest to the obstetrician. By using the oil-ether method and administering ethylene instead of nitrous oxide or supplementing nitrous oxide with ethylene and making certain that the mother is never cyanosed at any time, but has an abundant supply of oxygen at all times (over 8 per cent), we believe that morbidity and mortality for both mother and baby will be very greatly decreased.

Summary

1. The advantages of anesthesia in labor are pointed out, together with the dangers. Particular emphasis is given to the use of nitrous oxide.

2. It is shown that the objection to anesthesia is without foundation; if anything, anesthesia is beneficial.

3. A safe technique for the administration of ether per rectum is sketched briefly. Mr. Guntrip's innovation, the solution of ether in latex rather than oil, will greatly simplify the administration of ether per rectum during labor.

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MANAGEMENT OF THE NURSING STUDENT'S INSTRUCTION IN ANESTHESIA

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Read at the sixth annual meeting of the New York Association of Nurse Anesthetists, held in New York City, May 17-19, 1939.

The ability to teach is not necessarily one of the qualifications of a skillful anesthetist, but the adoption by the anesthetist of certain modern teaching methods will enable her to correlate this phase of her work with the teaching techniques prevailing in her institution, and will enhance the value of her services.

It is generally agreed that this course does not aim to make the nurse an anesthetist, but rather to give her a sound scientific understanding of how anesthetic drugs affect the central nervous system to produce the desired zone of anesthesia. Another object in teaching anesthesia to student nurses is to acquaint them with one of the three very important factors in the development of modern surgery. It is in fact only to a slightly lesser degree an important factor in the development of modern nursing, since it is often the first point at which the nurse is brought into close personal contact with the patient. It offers one of the first opportunities for her to play an important role in protecting the patient against the emotional insults so common and so difficult to avoid in surgery. Hence the aim is to prepare the nurse so that she may have a knowledge of the facts involved in the clinical use of anesthetic agents, to observe why and how they act upon the patient, to enable her to recognize the earliest toxic symptoms, and at the same time help her to appreciate how easily the personality of the nurse may enter into the experience by pointing out that in proportion to her skill and tact she may stand between the patient and much of the terror frequently so fruitful of emotional disaster in this period.

In order to provide for fixation of facts in the mind by utilizing methods of visualization in teaching this subject, we employ charts and diagrams to illustrate the action of anesthetics upon the different parts of the nervous system. We use the diagram shown on page 384, Blumgarten's Textbook of Materia Medica Pharmacology and Therapeutics, seventh edition, the figure being enlarged to 2¼" x 8½" and mimeographed on paper 8½" x 11". Sufficient copies to illustrate the varying actions of ether, chloroform, nitrous oxide, ethyl chloride, ethylene, avertin, novocain, cyclopropane, evipal and vinethene are furnished to the class. From a composite master-chart (see pages 173-4-5-6) giving the stimulatory reactions observed clinically, as well as the depressant and toxic effects, the student indicates the reactions of a designated anesthetic agent in its different stages by appropriately coloring the af-

fected areas on her individual diagram —in red for stimulation, blue for depression or motor paralysis, and green for toxic or poisonous effects. (In reproducing the diagram in black and white, dots are substituted for red, vertical lines for blue, and horizontal lines for green).

For example, to thus illustrate diagrammatically the effects of ether during the stage of surgical anesthesia, the absence of such mental activities as attention, memory, reasoning, consciousness, judgment, imagination, will power, et cetera, agreed by psychologists to be cortical reactions, are noted by coloring the cortical reaction blocks blue. Blue is again used in the cerebrum at the site of the motor, sensory, visual, auditory and speech areas to indicate their depression. The spinal cord, being the center of reflex action, is colored blue also to indicate diminished reflex action. The medullary reactions concern the vital centers and refer to the respiratory functions, control of the caliber of the blood vessels, and the inhibition or acceleration of the heart beat, consequently since the pulse under ether is at first rapid and strong, due to stimulation of the cardio-accelerator nerves, the block in the medulla showing this area is colored deep red. As the anesthetic state progresses, the pulse becomes somewhat slower, due to stimulation of the cardio-inhibitory nerves, which is indicated by coloring this block also red. A depressant effect on this set of nerves results in a faster beat, which in overdosage is brought about by a paralysis of the normal inhibitory action, and is consequently indicated by blue. Because the breathing is deep, rapid and regular, this stimulatory effect is noted by coloring the respiratory block red. The slight rise in blood pressure under ether is portrayed by a faint red coloring of the vasomotor area. The increase in salivary, bronchial, stomach and intestinal glandular activity is indicated by red. Because the volume of urine is diminished in ether anesthesia due to this agent's toxic action on the kidneys, these organs are colored green. The liver is also colored green, since ether has a tendency to produce lesions in that organ. The face of the figure is tinted pink to show the slightly heightened color as the result of capillary dilation. An area marked off on the surface of the body figure and labeled "sweat glands" is colored red to indicate the increased perspiration.

These diagrams may be used to cover the reactions typical of each stage of anesthesia (induction, maintenance and recovery, or overdosage); or students may make separate diagrams to illustrate each of the above mentioned reactions (stimulatory, depressant and toxic). However, our experience has shown that the picture is more understandable if the three reactions are incorporated into a single composite diagram covering the stage of maintenance or surgical relaxation.

We have enlarged these charts and diagrams on art paper 12" x 18" to serve as illustrative teaching material for our classes, and find that information presented in this vivid manner is more readily grasped by the student, retained and intelligently and scientifically applied. To provide for review and clarification of the subject material, individual copies of the accompanying chart were issued in skeletal form and the data filled in as an out-of-class experience.

To present the subject of anesthesia in this fashion presupposes a thorough knowledge of anatomy and physiology. This short course is integrated into the surgical nursing and operating room technique series and serves as a unit

comprising six lecture hours, one demonstration, and three examinations. The outline of study follows the present National League curriculum.

Objective type examinations covering Matching, True-False, Single and Multiple Choice, Completion, and Analogy, are employed. Observation and experimental study have shown that examinations serve to motivate students to make more careful preparation to organize the material of the course into related units for proper assimilation and later recall. We feel that this type of examination has proved to be a useful stimulus to insure a greater amount of over-learning. Too often the examination has been used for the sole purpose of measuring the outcome of the teaching at the end of a period of instruction, as a basis for grades for the course. A diagnostic test at the close of a unit of study helps to bring out teacher and student weaknesses and thus promises a basis for remedial individual and class instruction before presenting the next unit.

MODERN METHODS OF EXAMINATION

The examination in one form or another has always been an integral part of all educational systems. In ancient times the Greeks, Romans and Chinese employed elaborate examination schemes. During the Middle Ages *public* examinations played a prominent part in the lives of students. Centuries later the advantages of the written examination over the oral were emphasized, and in 1845 Horace Mann vigorously advocated this method. But, on the whole, progress in the technique of examinations has been very slow. Education has made pronounced strides during the past century, the content of courses has been changed, and methods of instruction have been improved, but the examinations have remained much as they were. "Compare," "define", "describe", "discuss" and "explain" are familiar words to most of us, for the same primitive, subjective methods of examining have prevailed until very recent times, though greater emphasis is now being placed on this phase of educational technique.

Contrary to the general impression (particularly among students) examinations are not given solely for the purpose of testing the student's knowledge, but also to test the ability of the teacher to impart such knowledge. Because the resident nurse anesthetist is usually delegated to teach this course in the student nurse's curriculum, the following information is offered with the view of aiding her in the matter of imparting this knowledge by methods in general use in the educational system of her institution.

The purpose and function of an examination makes of it an instrument of motivation and of measurement. An examination is said to be a *good examination* when it measures what it is supposed to measure, and measures it accurately. When it has accomplished that purpose it is said to be valid and reliable. Examinations are classified under two general headings: written and oral. The written examination may be described as traditional and standardized, the essay type being its most classical example. Because the essay type (which incidentally is far from being abandoned) calls forth less than half of the student's knowledge, there has been a marked tendency to utilize a newer type of written examination, the objective type, in many of the nursing schools of the country during the past few years. And it is gratifying to note that this use of qualitative measurements for making an educational diagnosis is on the increase.

These newer types of tests are interesting to student and teacher, and are useful in measuring attitudes, and to prevent bluffing. They increase the student's knowledge of the principles of the subject, and facilitate the organized and connected discussion. Such tests may be highly diagnostic, and carry a great degree of validity and reliability if properly made.

This type of examination, however, is hard to formulate; it is time-consuming in preparation if the questions are to be valid, reliable, and objective. The scoring, too, is more complicated, but when this is mastered the papers are graded in a much shorter time. It must be borne in mind that this method does not insure a high degree of curricular validity unless the examination provides for an extensive sampling of the work covered by a particular subject. The examination must be objective and instead of five or ten questions, at least one hundred questions should be included. They should be selected carefully with the view of obviating all necessity for modification by the student. In other words, ambiguity plays no part in this type of examination, and questions requiring answers that are contingent upon varying circumstances should not be used. This is especially true in the teaching of anesthesia, since the choice of agents and methods of administration for specific operations at one hospital may differ radically from those employed at another, and since these factors may also vary from accepted routine in any hospital when the individual patient's condition indicates such variation.

There are disadvantages that must be borne in mind, in regard to this type of testing, including the tendency to become factual, the danger of overemphasizing memory questions, and the lack of opportunity for student self-expression. However, in our school we have found the advantages to exceed the disadvantages, and because the students are accustomed to examinations of this type in their other courses it was decided to carry out the plan in this course also.

The following examples are presented to illustrate two tests of this type that may be devised by the progressive anesthetist in teaching this course. They are the Plural Choice and Completion tests. The essay type is reserved to test the data presented on equipment of the anesthesia room, pre-, intra, and postanesthetic care of the patient, psychic technique, and the relationship between the anesthetist and the nurse. These questions are of the problem type, and also lend themselves admirably to the development of an out-of-class (practical) examination. The discussions in class during this course were greatly stimulated, with more intelligent reasoning evidenced, and when the work was completed it was felt that a more satisfactory course had been given from the standpoint of both teaching and student preparation.

No attempt is being made here to explain the method of scoring the examinations presented in this article. It is hoped that this omission will stimulate the progressive teacher to inform herself of this and other details of these tests from the wealth of literature available on this subject, and to endeavor to incorporate this method into her teaching program for the coming year. We believe that such a step will bring these two departments of her hospital into a closer relation that will be of mutual benefit.

PLURAL CHOICE TEST

Directions: Place in the blanks the numbers of those statements which

OF VARIOUS ANESTHETICS UPON THE SYSTEMS OF THE BODY

	Ethyl Chloride (Inhalation)	Avertin (Rectal)
...ow is promptly lost, with a ...well-being, quiet and supreme ...t. ...tate is present for some appre- ...e before deep tendon reflexes ...ed.	Although the centers of pain and sensation may be paralyzed, the quantity administered does not suffice to paralyze the reflexes, muscles, et cetera.	The psychic areas in the brain may be dulled or unaffected.
...ely affected; respiration slow ...r. More like normal sleep.	Respirations are not affected as a rule, but may be quickened and deepened.	The respirations are quiet and regular in character.
...with hemoglobin to form a com- ...h gives a florid appearance to	The effect upon the heart is paralytic but is relatively safe. The pulse may be slow and weak.	There is no material effect upon the heart beat.
...y to increase in blood pressure ...acted by dilation of smaller ...els, causing a slight and tran- ...g. ...l color; warm and dry.	In full surgical narcoses a drop in blood pressure is noted. This agent is taken up by the blood rapidly and eliminated rapidly. The face is usually slightly flushed.	The blood pressure shows a tendency to a pronounced drop. The skin maintains a normal color.
...dividuals a complete flaccidity ...fetal muscles is present on dis- ...of tendon reflexes. Tone, ...y and irritability of gastro- ...ract and uterus are lost.	Muscular rigidity may be present during the excitement stage; strong tendency to contraction of masseter muscles.	The muscular relaxation is much like that of other anesthetics. For complete relaxation must be supplemented with another agent.
...ay rove or be downcast.	In complete anesthesia the eyeballs are fixed or rolling, pupils widely dilated.	The pupils are contracted.
...lands are not particularly stim- ...ther is tracheal nor bronchial ...reased. ...ulation of the stomach glands ...a transient nausea. ...ent in kidney function not man- ...gh the volume of urine may be ...l.	Gastric and intestinal functions are slightly influenced. Liver and kidney secretions are diminished.	The system is not affected in an abnormal way.

T OF VARIOUS ANESTHETICS UPON THE SYSTEMS OF THE BODY

s)	Vinethene (Inhalation)
complete narcosis.	Rapid and complete narcosis.
at first are somewhat superficial and rapid but the regular rhythm.	Respirations are somewhat rapid and shallow, but smooth and of equal volume.
y unchanged; remains full and regular.	Heart action remains regular, even when the blood pressure is severely affected.
is taken up by the blood rapidly and eliminated	This agent is taken up by the blood rapidly and eliminated rapidly. Blood pressure is not greatly altered in moderate depth of anesthesia. Maintains a normal color.
f blood pressure is only from 15 to 20 millimeters. normal color.	
muscular relaxation sets in early without any excitement.	Pronounced muscular relaxation, with a brief period of excitement.
anesthesia eyeballs are fixed and pupils are con-	Eye signs are unreliable, even during deep anesthesia; with relaxed skeletal muscles rolling of the eyeballs occurs.
schial, bronchial and sweat not increased. Rela- of vomiting. Detoxication is due to its chemical ism, most of which takes place in the liver. Only injected substance are eliminated in the urine.	Excessive salivation, nausea or vomiting occurs in about 5 per cent of cases.

make the leading statement correct and complete.

1. Nitrous oxide is: ..... (1) a volatile anesthetic, (2) non-toxic, (3) inflammable, (4) slowly eliminated, (5) rapidly eliminated, (6) non-inflammable, (7) a psychic depressant, (8) a compressed gas, (9) administered with oxygen, (10) administered without oxygen.

2. Immediate postanesthetic nursing care of the patient entails: ..... (1) forcing fluids by mouth, (2) maintaining an unobstructed airway, (3) taking and recording patient's temperature at five-minute intervals, (4) keeping all windows closed, (5) taking and recording pulse and respiratory rates at five-minute intervals until consciousness returns, (6) keeping patient comfortably warm, (7) keeping the patient warmly covered, (8) keeping room well ventilated, (9) keeping patient out of draft, (10) frequent inspection of dressing to detect hemorrhage in patient with normal pulse, (11) measures for prevention or relief of nausea, (12) frequent inquiries as to patient's comfort.

3. The following conditions characterize a properly administered ether anesthesia: ..... (1) cyanosis, (2) dyspnea, (3) pallor, (4) heightened color, (5) increased secretions, (6) increased blood pressure, (7) decreased blood pressure, (8) decreased mucus secretions, (9) complete relaxation, (10) stertor.

4. Carbon dioxide is administered: .....(1) with small amounts of oxygen, (2) with large amounts of oxygen, (3) without oxygen, (4) in melancholia, (5) in pneumonia, (6) in resuscitative procedures, (7) in acapnia, (8) to depress exaggerated respiratory effort, (9) to stimulate respiration, (10) as an anodyne, (11) in atelectasis, (12) to control hemorrhage.

5. The formula for ethylene is: ..... (1) $CHCl_3$, (2) N_2O, (3) CO_2, (4) $(C_2H_5)_2O$, (5) C_2H_4, (6) C_3H_6.

6. Excess quantities of oxygen produce: ..... (1) rapid respirations, (2) slow respirations, (3) anoxemia, (4) heightened color, (5) reduced hemoglobin, (6) nausea, (7) pulmonary irritation, (8) a lessening of the narcotic effect of the anesthetic mixture, (9) increased hemoglobin, (10) hallucinations.

7. Excess quantities of carbon dioxide produce: ..... (1) acapnia, (2) anoxemia, (3) hypercapnia, (4) decreased hemoglobin, (5) pulmonary irritation, (6) slow respirations, (7) rapid respirations, (8) a feeling of lassitude, (9) stimulation of respiratory center, (10) paralysis of respiratory center.

8. Symptoms of acute cocaine poisoning are: ..... (1) flushed skin, (2) stupor, (3) weak, rapid pulse, (4) contracted pupils, (5) dilated pupils, (6) profuse perspiration, (7) pallor, (8) a skin rash at site of injection, (9) restlessness, (10) slow and labored respiration.

9. Avertin is administered: ..... (1) by inhalation, (2) intravenously, (3) by rectum, (4) by spinal injection, (5) subcutaneously, (6) by local application to the site of operation, (7) by retention enema, (8) by suppositories, (9) by inunction, (10) by spraying.

10. During the induction of a general inhalation anesthetic the following points should be observed: ..... (1) patient in the supine position, (2) patient in the prone position, (3) patient's eyes covered, (4) one or more attendants present, (5) no attendants

present, (6) patient's arms folded over chest, (7) patient's arms placed at sides parallel to body, (8) restraining straps applied previous to induction, (9) restraining straps applied during latter stage of induction, (10) absolute quiet should prevail except for the anesthetist's voice addressing the patient, (11) anesthetist should ask patient questions to confirm degree of anesthesia, (12) anesthetist should make only positive, reassuring statements to patient.

Key to Plural Choice Test:

Question	*Answers*
No. 1	2, 5, 6, 8, 9
No. 2	2, 5, 6, 8, 9, 11
No. 3	4, 5, 6, 9
No. 4	2, 5, 6, 7, 9, 11
No. 5	5
No. 6	2, 4, 8, 9
No. 7	3, 4, 5, 7, 9, 10
No. 8	3, 4, 6, 7, 9
No. 9	3, 7
No. 10	1, 3, 4, 7, 9, 10, 12

COMPLETION TEST

Directions: Complete the following statements. (Completion statements are in italics).

1. A general anesthetic agent is *a drug which produces a loss of sensation throughout the body.*

2. A general anesthetic agent acts by *being absorbed into the bloodstream through the medium of the lungs and mucous membranes.*

3. An anesthetic is excreted by *the lungs, kidneys, skin and bowels.*

4. The selective action of an anesthetic agent *is on nerve tissues.*

5. The common general anesthetic drugs are *ether, nitrous oxide, ethylene, ethyl chloride, chloroform, avertin, cyclopropane, evipal and vinethene.*

6. Ether as an anesthetic was first used by *Dr. Crawford W. Long in 1842 at Jefferson, Georgia, for excision of a tumor.*

7. The term "anesthesia" was coined by *the poet, Oliver Wendell Holmes.*

8. Ether is administered by *inhalation, intravenously or by rectum.*

9. The first stage of ether anesthesia is characterized by *local irritation and accentuated sensations;* the second stage is one *of excitement and rigidity;* the third stage is one of *anesthesia, relaxation, and unconsciousness;* the fourth stage is characterized by *the return of the reflexes and consciousness.*

10. Symptoms of too much ether are, respiration *slow, shallow, gasping;* pulse *weak, rapid, irregular;* pupils widely dilated; color *cyanotic.*

11. Difficulties sometimes occurring during anesthesia which may cause dangerous symptoms are *a relaxed or edematous condition of the tongue; accumulation of the mucus in the mouth, or regurgitation into the throat.*

12. The great danger following anesthesia is *pneumonia;* predisposed by *pulmonary hypoventilation and the patient being too warmly covered, causing excessive perspiration and consequent loss of body heat.*

13. The nursing care involved in the prevention of postoperative pneumonia consists of *keeping the patient comfortably warm in well-ventilated room, out of drafts, with frequent turning of the patient in bed.*

14. The anesthetic care involved in the prevention of postoperative pneumonia consists in *administering the minimum amount of the anesthetic agent necessary for the desired relaxation; aspiration of pharyngeal mucus; keeping the patient's chest and shoulders well covered during operation; and the administration of carbon dioxide and oxygen at the conclusion of the anesthesia to*

facilitate elimination of the anesthetic and to prevent hypoventilation.

15. In administering a general anesthetic the major "indicators" are *respiration, color, pulse, pupillary reactions and blood pressure.*

16. A local anesthetic is *a drug that produces insensibility to pain by depressing sensory nerve-endings.* It does not produce *unconsciousness.*

17. One can minimize fear and apprehension before and during anesthesia by *(1) a preanesthetic visit to the patient, (2) inducing anesthesia in an anesthesia room away from all sights and sounds of the operating room, (3) not applying restraining straps to a conscious, unresisting patient, (4) neither rushing nor prolonging the induction stage, (5) the intelligent use of suggestive therapy during the first part of the induction stage.*

18. Six local anesthetics are: *(1) Novocain, (2) cocaine, (3) alypin, (4) butyn, (5) stovaine, (6) ethyl chloride.*

19. Local anesthetics are administered by the following methods: *(1) spraying or applying to the surface of the skin or mucous membrane, (2) infiltration into subcutaneous tissue, (3) injection into nerve-trunk (regional), (4) injection into spinal canal.*

20. Six general anesthetics are: *(1) ethyl chloride, (2) ether, (3) chloroform, (4) nitrous oxide, (5) ethylene, (6) cyclopropane.*

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MASTER CHART
THE EFFECT OF VARIOUS ANESTHETICS UPON THE SYSTEMS OF THE BODY

Systems	Ether (Inhalation)	Chloroform (Inhalation)	Nitrous Oxide (Inhalation)
NERVOUS Higher cerebral Lower cerebral Spinal cord Medullary centers	Progressively paralyzed	Progressively paralyzed	When first inhaled is of a pleasurable exhilaration; senses are rendered more acute, followed by analgesia, then anesthesia, during which patient is unconscious and insensitive to pain.
RESPIRATORY	Powerful stimulant at first, then breathing becomes slower and decreases in depth	Causes asphyxial symptoms to appear: apnea of a pronounced character can occur quickly.	Respirations are regular, deep and of almost normal frequency.
CIRCULATORY Heart Blood Blood Pressure Color	Direct stimulant, pulse accelerated Number of erythrocytes decreased and changed in configuration. Remains constant, may be raised slightly. More flushed than normal.	Depressant action very pronounced. Administered to the degree of surgical narcosis acts as direct heart sedative or depressant and death occurs as result of this. Chemical composition of blood changed. Dilatation of entire cardiovascular system causes drop in blood pressure. Pallor which may become pronounced.	Direct action exerted upon heart. Pulse full at first, rapid; can become slow and strong. Very little variation in blood pressure, marked rise can occur. Differences in quantity of hemoglobin and erythrocytes are of transitory nature. Lips feel warm at first; skin assumes the duskiness typical of this agent.
MUSCULAR (General)	May be thrown into state of tonic contraction, proceeding into muscular relaxation. Spasms of various muscles may occur during course of anesthesia.	Muscular spasms are prone to characterize ordinary administration. Muscles of extremities, abdomen, chest, larynx, neck, and jaws apt to be involved in tonic spasms in earlier stages; clonic spasms of certain muscles may occur. Muscular relaxation follows spasm as a rule.	Given alone, it does not produce full muscular relaxation.
MUSCULAR (Eyes)	Reactive to light; may be dilated or contract to normal. Eyeballs generally fixed, may be rolling.	Pupils dilated at first, then contract but respond to light. Fixed eyeballs.	Pupils become dilated in stage of excitement. Eyelids twitch and separate, but reflexes are abolished in final stage of surgical anesthesia.
GLANDULAR Salivary Tracheal Bronchial Stomach Intestines Liver Kidneys Sweat	Hypersecretion of saliva. Stimulative and irritative. Produces lesions, irritative; causes abnormal constituents to appear in urine. Perspiration increased.	Hypersecretion of mucous, salivary, sweat glands. Irritant to liver, kidney, spleen; diminution in urine volume.	 Alimentary tract not unfavorably affected; transient nausea. Urinary secretion rapidly diminished.

THE EFFECT OF VARIOUS ANESTHETICS UPON THE SYSTEMS OF THE BODY

Systems	Ethylene (Inhalation)	Ethyl Chloride (Inhalation)	Avertin (Rectal)
NERVOUS Higher cerebral Lower cerebral Spinal cord Medullary centers	Consciousness is promptly lost, with a sense of well-being, quiet and supreme contentment. Analgesic state is present for some appreciable time before deep tendon reflexes are abolished.	Although the centers of pain and sensation may be paralyzed, the quantity administered does not suffice to paralyze the reflexes, muscles, et cetera.	The psychic areas in the brain may be dulled or unaffected.
RESPIRATORY	Not markedly affected; respiration slow and regular. More like normal sleep.	Respirations are not affected as a rule, but may be quickened and deepened.	The respirations are quiet and regular in character.
CIRCULATORY Heart			
Blood	Combines with hemoglobin to form a compound which gives a florid appearance to patient.	The effect upon the heart is paralytic but is relatively safe. The pulse may be slow and weak.	There is no material effect upon the heart beat.
Blood Pressure	A tendency to increase in blood pressure is counteracted by dilation of smaller blood vessels, causing a slight and transient oozing.	In full surgical narcoses a drop in blood pressure is noted. This agent is taken up by the blood rapidly and eliminated rapidly.	The blood pressure shows a tendency to a pronounced drop.
Color	Heightened color; warm and dry.	The face is usually slightly flushed.	The skin maintains a normal color.
MUSCULAR (General)	In most individuals a complete flaccidity of the skeletal muscles is present on disappearance of tendon reflexes. Tone, rhythmicity and irritability of gastro-intestinal tract and uterus are lost.	Muscular rigidity may be present during the excitement stage; strong tendency to contraction of masseter muscles.	The muscular relaxation is much like that of other anesthetics. For complete relaxation must be supplemented with another agent.
MUSCULAR (Eyes)	Eyeballs may rove or be downcast.	In complete anesthesia the eyeballs are fixed or rolling, pupils widely dilated.	The pupils are contracted.
GLANDULAR Salivary Tracheal Bronchial Stomach Intestines Liver Kidneys Sweat	Salivary glands are not particularly stimulated, neither is tracheal nor bronchial mucus increased. The stimulation of the stomach glands may cause a transient nausea. Derangement in kidney function not manifest, though the volume of urine may be diminished.	Gastric and intestinal functions are slightly influenced. Liver and kidney secretions are diminished.	The system is not affected in an abnormal way.

THE EFFECT OF VARIOUS ANESTHETICS UPON THE SYSTEMS OF THE BODY

Systems	Evipal (Intravenous)	Vinethene (Inhalation)
NERVOUS Higher cerebral Lower cerebral Spinal cord Medullary centers	Rapid and complete narcosis.	Rapid and complete narcosis.
RESPIRATORY	Respirations at first are somewhat superficial and rapid but soon assume the regular rhythm.	Respirations are somewhat rapid and shallow, but smooth and of equal volume.
CIRCULATORY Heart	Pulse usually unchanged; remains full and regular.	Heart action remains regular, even when the blood pressure is severely affected.
Blood	This agent is taken up by the blood rapidly and eliminated rapidly.	This agent is taken up by the blood rapidly and eliminated rapidly. Blood pressure is not greatly altered in moderate depth of anesthesia.
Blood Pressure	Reduction of blood pressure is only from 15 to 20 millimeters.	
Color	Maintains a normal color.	Maintains a normal color.
MUSCULAR (General)	Pronounced muscular relaxation sets in early without any preliminary excitement.	Pronounced muscular relaxation, with a brief period of excitement.
MUSCULAR (Eyes)	In complete anesthesia eyeballs are fixed and pupils are contracted.	Eye signs are unreliable, even during deep anesthesia; with relaxed skeletal muscles rolling of the eyeballs occurs.
GLANDULAR Salivary Tracheal Bronchial Stomach Intestines Liver Kidneys Sweat	Salivary, tracheal, bronchial and sweat not increased. Relative absence of vomiting. Detoxication is due to its chemical disintegration, most of which takes place in the liver. Only traces of the injected substance are eliminated in the urine.	Excessive salivation, nausea or vomiting occurs in about 5 per cent of cases.

THE EFFECT OF VARIOUS ANESTHETICS UPON THE SYSTEMS OF THE BODY

Systems	Novocain (Spinal)	Cyclopropane (Inhalation)
NERVOUS Higher cerebral Lower cerebral Spinal cord Medullary centers	The effect is analgesic in character.	Progressively paralyzed.
RESPIRATORY	There is a tendency to rapid but regular breathing.	Quieter and more shallow. Respiratory depressant.
CIRCULATORY Heart	The pulse is faster and stronger.	Untoward effects upon the heart and cardiovascular system should not occur under reasonable conditions.
Blood		Effect on blood chemistry is very slight. There is a slight rise in blood sugar but the level very quickly returns to normal, and practically no change in acid base balance. No drop in blood pressure. It may rise 10, 20, or 30 millimeters immediately after the induction but returns to normal within 10 to 15 minutes after administration begins.
Blood Pressure		
Color	The skin is pale where injected.	Color normal.
MUSCULAR (General)	Pronounced muscular relaxation in limited areas.	Produces relaxation comparable to ether.
MUSCULAR (Eyes)	The pupils react by showing dilation.	React to light; may be dilated or contract to normal. Eyeballs may be fixed, may be rolling.
GLANDULAR Salivary Tracheal Bronchial Stomach Intestines Liver		The system is not affected in an abnormal way except stomach glands may cause a very slight transient nausea.
Kidneys	The volume of urine is diminished.	
Sweat	The activity of the sweat glands is increased.	

GENERAL ANESTHESIA FOR DENTAL SURGERY IN THE HOSPITAL

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Read before the seventh annual meeting of the Pennsylvania Association of Nurse Anesthetists, April 28, 1938, William Penn Hotel, Pittsburgh, Penna.

The administration of general anesthesia for dental surgery is one of the most difficult tasks confronting the nurse anesthetist.

The anesthetic agent most frequently employed for dental surgery in the hospital is ether. The anesthetist saturates the body tissues with ether to obtain a wide surgical plane so that even with the mouth open the dentist can operate for some time before the patient becomes too light.

I dislike this technique for several reasons:

1. Excessive dosage results in excessive toxicity, producing degenerative changes in the cortical cells of the brain and in the liver cells.
2. The cough reflex is obliterated, thereby increasing the danger of the aspiration of blood and mucus into the lungs with the possibility of a lung abscess developing.
3. Excessive dosage materially increases the possibility of postanesthetic lung troubles, such as bronchitis, bronchopneumonia, embolism, infarction, massive collapse or pulmonary abscess.
4. Late ether convulsions sometimes occur in deep or prolonged anesthesia, especially in patients with septic conditions. Certainly the majority of patients for dental extractions, the most frequent dental surgical operation, are septic.
5. Coagulation time is definitely prolonged. Following dental extractions much of the healing has to take place by secondary intention, as to obtain healing by first intention would mean the sacrifice of too much alveolar process. Hence, the dental surgeon is desirous of having a firm clot form quickly.
6. Recovery time is prolonged.
7. The alkali reserve is reduced and at the same time ketosis is produced.
8. Increased postanesthetic nausea results from over-saturation.

I recognize the fact that many of these untoward effects would follow overdosage with any inhalation anesthetic. However, in my opinion the ideal anesthetic combination for dental surgery in the hospital is the use of the basal narcotic, tribromethanol (avertin and amylene hydrate) and nitrous oxide and oxygen. This combines the non-toxic, oxygen-displacing chemical nitrous oxide with just a sufficient amount of a lipoid soluble drug, such as avertin, to give the required relaxation. The advantages of this method are:

1. The patient is spared the shocking experience of a conscious trip to the operating room.
2. A wider surgical anesthesia plane is obtained.

3. A marked increase in oxygen percentage in the nitrous oxide-oxygen mixture is gained.
4. Sufficient relaxation is present.
5. Postanesthetic analgesia is present for several hours, reducing materially the need for analgesics.
6. Absence of nausea, except when the patient has swallowed blood because the dental surgeon or his assistant has failed to keep it suctioned out of the oral cavity.
7. The anesthetic is under the direct control of the anesthetist.
8. In case of an emergency the inhalation anesthetic can be withdrawn quickly and consciousness restored.

At the Magee Hospital our technique for dental surgery is as follows:

The patient's weight is obtained and the dosage determined by figuring only 60 milligrams of avertin per kilogram of body weight. We insist on minimum doses of a basal anesthetic. In cachectic, debilitated, obese, dehydrated and toxic patients we use only 50 milligrams per kilogram. Dental surgery does not require the "dish-rag" relaxation necessary for abdominal surgery, hence we can use minimum doses, thereby reducing the degree of respiratory depression and lessening the fall in blood pressure which accompanies the use of avertin as a basal anesthetic. Recovery is also facilitated. The evening before operation the customary cleansing enema is given. If the patient is nervous and apprehensive, one of the barbituric acid derivatives is given as a hypnotic.

The oral cavity is thoroughly cleansed with sprays. The teeth are scaled to remove gingival and subgingival calculus. The teeth and investing structures are painted with a germicidal solution. This is to prevent the aspiration of bacteria-laden particles of "tartar" or calculus which have been known to cause lung abscesses. Rectal irrigation is avoided the day of operation, as the fluid which remains in the bowel retards absorption and a minimum dose being used, further delays loss of consciousness.

Sedatives or hypnotics the day of operation are avoided. The usual preoperative, a hypodermic injection of morphine and atropine, is not given. These drugs tend to further depress an already depressed respiration and circulation and may also be the cause of postoperative excitement. The avertin is administered in the patient's room, and in the operating room nitrous oxide and oxygen are administered by a nasal inhaler. I prefer an intermittent flow type machine, which makes it possible to use pressure if desired. When the normal plane of the surgical stage is reached, the mouth is opened, the oropharyngeal partition (incorrectly called the "throat pack") is placed and the operation begun.

It is agreed that general anesthesia for dental surgery, next to tonsillectomy, is the most difficult general anesthetic to administer. This is due to the fact that we are operating in an airway—the oral cavity. Meltzer has very appropriately called the space between the external respiratory orifices and the epiglottis the "death space". I feel he should include the larynx and trachea in this space. It is universally agreed among anesthetists that blockage of the respiratory tract causes more trouble than all the other untoward anesthetic factors combined. Every article or text dealing with inhalation anesthesia admonishes the anesthetist to maintain at all times a "clear" or "free" or patent airway, and then passes by this most important subject with slight mention of two or three possible causes of respiratory blockage. Intel-

ligent anesthetization of the human subject requires a comprehensive understanding of all possible forms of asphyxia and in particular, that which results from mechanical respiratory embarrassment. Inhalation anesthesia utilizes the normal respiratory excursions to carry the anesthetic vapor or gases into the lung alveoli where, by the well-known process of diffusion, due to a difference in pressure of the gases in the blood stream and in the lungs, the percentage of oxygen carried by the blood stream is lowered, resulting in gradual cessation of the function of the gray nerve fiber which requires twice the amount of oxygen for its metabolic processes than does any other tissue of the body. Smooth, uninterrupted inhalation anesthetization, then, has for one of its primary requisites an open, unimpeded airway through which the gases flow freely between the lung alveoli and the apparatus from which we are delivering and regulating the pressure and percentage of the mixed gases; the gases under consideration being nitrous oxide with enough oxygen to maintain life and prevent asphyxia.

One can readily appreciate from the foregoing that an alteration in the diameter of the airway, or abnormal relations of anatomic divisions of the air passages (which consist of the nasal and oral cavities, nasopharynx, oropharynx, larynx, trachea and bronchi) or any agent which might block the airway, will result in asphyxiation of the patient, depending upon the degree of mechanical respiratory embarrassment or alteration in position. Ross and Fairlee, in a splendid chapter on asphyxia in the "Handbook of Anesthetics" have illustrated "the vicious circle of asphyxia" resulting from mechanical respiratory embarrassment.

In this cycle we start with one of the many forms of respiratory blockage or obstruction. This, as we have seen, results in a reduction in the aeration in the lung alveoli, which in turn results in a decreased oxygenation of the blood. This results in turgescence of the laryngeal and pharyngeal mucous membranes, which, with our original mechanical stoppage, results in greater constriction of the air passage. The situation is rendered worse when we note that reduced oxygenation of the blood also results in irritation to the cerebral motor centers, which in turn results in spasm of the abductors of the vocal cords, giving still more mechanical embarrassment. At each cycle the anoxemia becomes succeedingly worse until we have an asphyxiated patient. Asphyxia from this cause throws an excessive back pressure on the heart muscle and may cause heart failure, especially when myocardial disease is present. During all this time respiratory excursions have become more labored, the muscles are rigid or spastic, blood pressure has risen due to muscular activity, the heart muscle is exhausting its reserve energy and the patient is rapidly approaching death unless immediate steps are taken to avoid this crisis.

In dental anesthesia we are faced with many more possibilities of mechanical respiratory embarrassment than are met with in anesthesia for major surgical operations. Of all the reasons for interference with normal ventilation of the lungs, the most frequent, in my opinion, is the failure of the anesthetist to hold up the mandible and head. Under anesthesia, the muscles are relaxed and this includes the temporal, masseter, buccinator, and the internal and external pterygoid, which hold the mandible in its normal position. The intrinsic and the extrinsic muscles of the tongue are also relaxed

It can readily be seen that the weight of the mandible and tongue resting on the larynx would tend to depress the larynx and interfere seriously with the free flow of the gases. It is necessary in dental anesthesia for the anesthetist to support the mandible constantly during anesthesia, with a steady force upward and outward. This traction on the mandible is especially necessary when the operator is extracting teeth from the mandible or using an elevator on the mandible, because in this instance we have another reason for mechanical respiratory embarrassment, the depression of the mandible by the operator. Any downward force exerted by the operator must be offset by an upward pull on the mandible by the anesthetist.

When operating on the mandible it is necessary to utilize the index finger to move the tongue, for the double purpose of protection and better vision. This downward and many times backward pressure on the tongue results in the base of the tongue being forced over the epiglottis and against the posterior pharyngeal wall, with its subsequent closure and stoppage of the egress and ingress of the gases. The operator should be informed of his interfering action, which he immediately corrects by moving his finger. The prone position causes the base of the tongue to fall against the back of the pharynx and produce additional obstruction. This condition should be anticipated and a suture placed through the tongue and attached to a hemostat so the tongue can be held forward.

Another frequent cause of respiratory impediment is the pulling up on the nasal inhaler to the point where the lower border of the inhaler is being pressed firmly across the nares. Naturally, when this condition exists, the patient can neither inhale nor exhale. With students it is necessary to constantly advise them to "pull up on the chin and push down on the nasal inhaler." Care must also be taken to prevent compression of the nares laterally. When the operation is in the superior anterior region of the maxilla and it is necessary to raise the lip, the anesthetist can raise it and the nasal inhaler together, thus keeping the periphery of the nasal inhaler sealed against the lip and away from the nares.

Improper placing of the oropharyngeal partition (so-called "mouth pack") so that a loose end drops into the pharynx and over the larynx is followed by labored respiration with little, if any, interchange of gases. In other instances, the pack may inadvertently be placed so far posteriorly as to fill the oropharyngeal space, with the result just noted. Removal of pack and then replacing it so that the pack just makes contact with the dorsum of the tongue, the right and left anterior pillars of the fauces and the junction of the hard and soft palate will correct this difficulty.

A pack that is too large and placed so that it will force the soft palate up and back until it makes contact with the pharyngeal wall, effectively stops the flow of the gases, encourages mouth-breathing and excites retching. The purpose of these gauze or cotton dressings is to partition the oral cavity from the pharynx for the dual purpose of preventing the dilution of the anesthetic gases on their way from the nasal cavity through the pharynx into the larynx and trachea and into the lungs, and to prevent the aspiration or swallowing of blood and mucus or even teeth or particles of tooth structure. This partition is not to absorb the blood. It holds the blood out of the throat until picked up by the suction.

The correct terminology for this partition is the oropharyngeal partition.

The use of a large rubber mouth prop or opening a mechanical gag too far will also depress the mandible to the extent of producing difficult respiration. It also makes it necessary to use a mouth cover to try to prevent dilution of the anesthetic gases with air. For this reason and the additional fact that the induction period is shortened by having the mouth closed, we do not insert a mouth gag or rubber prop until the patient is anesthetized. We have also found that this delay in opening the mouth has the additional advantage of assuring us that the patient is in the second stratum or normal plane of the third or surgical stage of anesthesia, in which the muscles are relaxed. If on attempting to place the gag or prop, we find that the muscles of the mandible are rigid, the anesthetist lightens the anesthesia. If this movement, in attempting to place the gag, results in reflex motion, the anesthetist deepens the anesthesia. It is to be remembered that coughing, straining and retching produce an engorgement of the laryngeal mucosa with resultant narrowing of the airway.

In children a very frequent difficulty encountered as a source of respiratory stoppage is enlarged adenoids and tonsils. The pack and tonsils stop the oral passage and the adenoids stop the nasal. An increase in the pressure at which the gases are delivered to the patient will be sufficient in most cases to establish nasal breathing. If not, the flow of the gases must be directed intraorally by means of rubber tubes. Deviated septa and nasal polypi present difficulties in breathing to some patients. Most of these can breathe quite readily through the nose when the pressure of the gases is increased. If not, anesthesia is obtained by the facial mask and maintained by intraoral tubes.

Seepage of blood, saliva and mucus around a poorly placed pack or a saturated one will form a viscous mass in the pharynx and larynx and interfere with normal respiration. The pack must be removed, and this collection must be aspirated by means of a suction tube (an indispensable piece of equipment when operating under general anesthesia) and a new partition placed in proper position. Not a few teeth and small sponges have been known to slip into the larynx and lodge between the vocal cords. Semi-solid vomitus has been inspirated. If this is suspected, the pack should be removed. If blood, mucus or vomitus is present, it should be removed by suction. The possibility of an impacted epiglottis in the glottis should first be ruled out by inspection with the mirror. The anesthesia should immediately be lightened so as to reestablish the cough reflex, so that if possible the tooth or sponge may be blown out by the violent expulsions of the gases. The cough reflex is said to be the "watchdog of the lungs" and the anesthetist should eadeavor to maintain such a plane of anesthesia as will satisfy the requirements of the operation and yet maintain the cough reflex. If the stoppage is so complete as to prevent inflation of the lungs, a tracheotomy should be performed. Every anesthetist should have a sterile No. 5 tracheotomy tube and Trousseau dilator on the anesthetic table in addition to cardiac and respiratory stimulants. After the tube is in place, the nasal inhaler is placed over the tube and the lungs inflated intermittently with oxygen and deflated by pressure on the chest.

Rarer cases of mechanical respiratory embarrassment occasionally seen are, for example, atresia of the palate, or

diseases of the mucous membranes of the soft palate and pharynx, making these surfaces raw, with their subsequent healing together. This abnormality should be corrected before any other operations are carried out. In the examination of the oral cavity and pharynx which precedes the administration of the anesthetic, the anesthetist should take particular note of the soft palate. In a number of instances it will be noted that the soft palate is so long as to completely curtain off the pharynx from view. In fact even with vigorously depressing the tongue, the uvula cannot be seen. In these cases, if evidence of respiratory embarrassment manifests itself during anesthesia, a definite increase in pressure will force the soft palate into the oral cavity, thus removing this obstruction from the air passage.

A common mistake made is for the anesthetist to interpret a slight snoring as indicative of a good surgical anesthesia. As a matter of fact, this is brought about by an approximation of the vocal cords due to a spasticity of these muscles induced by profound anesthesia. McKesson had definitely proved that a slight snore decreases the ventilation by as much as 50 per cent. A snoring sound should signify either an impingement upon the trachea or profound anesthesia. Treatment for the first is removal of impingement and for the latter, the lightening of the anesthesia.

One would believe that a dentist would never fail to remove artificial appliances or partial bridges or removable bridge work from the patient's mouth before the administration of a general anesthetic, and yet this oversight is frequently committed and in some cases with disastrous results. To prevent mechanical obstruction from this cause, remove all appliances first.

Hodgkin's disease, Ludwig's angina or diffuse submaxillary cellulitis may extend into the throat, causing difficulty in breathing. When operating upon these cases, an airway is almost a necessity, as when the patient is anesthetized and the muscles of the oral cavity and neck are relaxed, the respiratory embarrassment becomes most marked.

Large abscesses in the retropharyngeal area have ruptured spontaneously into the trachea from manipulation of the head and neck during anesthesia or surgical procedures in or about the mouth, resulting in death of the patient from drowning in his own pus. When this accident occurs, speedy teamwork of the anesthetist and surgeon is required to save the patient's life. A tracheotomy should be performed and a small rubber tube run down the trachea and connected to the suction apparatus, quickly removing the fluid in the lungs. Then the lungs should be inflated with oxygen through the tracheotomy tube. A gauze plug can be inserted into the trachea above the tracheotomy tube to prevent additional aspiration of fluid from the pharynx or oral cavity.

A knowledge of all the untoward incidents which might occur during anesthesia for dental surgery and the treatment for each one should be firmly fixed in the minds of all anesthetists. While legally you are not responsible for anesthetic deaths, morally you are if you fail to possess the mental equipment as well as physical equipment to cope with all emergencies, minor as well as major. Keep the operator informed regarding the progress of the anesthesia, advise him when his manipulations are embarrassing respiration, or when air or blood is leaking into the throat. Teamwork is more essential for smooth anesthesia in dental surgery than for any other operation.

SOME SALIENT ASPECTS OF CYCLOPROPANE ANESTHESIA

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Read at the eighth annual meeting of the Pennsylvania Association of Nurse Anesthetists, held in Philadelphia, April 26 and 27, 1939.

Cyclopropane, like many anesthetic agents, was known years before it was put into clinical use. It was discovered and described by August Freund in 1882, while he was looking for isomers of propylene. Following its discovery it seems to have been consigned to the archives until 1929, when Lucas and Henderson of Toronto became interested in it as a possible contaminent of propylene causing many cardiac irregularities when used as an anesthetic agent. Cyclopropane was suggested as a cause of this toxicity. Much to their surprise, it was not only found to be non-toxic, but to be a better anesthetic agent than propylene.

After extensive favorable trials on laboratory animals, Waters and his associates at the University of Wisconsin took the responsibility of putting this new drug on clinical trial. In October, 1933, a group of anesthetists from various parts of the country were invited to the University of Wisconsin to see and study the results of this work. Since that time, work has continually been in progress to perfect our knowledge of its nature, advantages, dangers, and limitations.

Physical Properties

Cyclopropane is a labile, colorless, explosive, gaseous hydrocarbon possessing a pungent odor. It has the same empiric formula as its isomer propylene —C^3 H^6. It is slightly soluble in water, but freely soluble in oil. The molecular weight of the gas is 42.05. The flash point varies under different conditions. The explosive range for cyclopropane and air is 2.0 to 10.0 per cent and for cyclopropane and oxygen is from 2.5 to 60.0 per cent. Anesthetic mixtures as ordinarily used are therefore well within the explosive range, as are mixtures with many of the other anesthetic agents.

Respiration

Respiratory stimulation with this drug during induction is so much less than with other common inhalation agents that the impression may be gained of severe respiratory depression. After the administration of morphine, cyclopropane further diminishes the already slowed rate and reduced amplitude of respiration.

Respiration during the third stage of cyclopropane anesthesia is usually regular. There is little diminution in minute volume exchange until intercostal activity is affected. A concentration of from 7 to 13 per cent is all that is required to carry the patient through the first two planes of the third stage. Concentrations up to 23 per cent may produce intercostal paralysis, and concentrations of 40 per cent or above will cause respiratory arrest.

As has already been stated, respiration is remarkably even and quiet in the upper planes of the third stage. At the point where intercostal paralysis occurs, a period of increased respiratory rate begins and is insufficiently deep to maintain an adequate exchange. The respiration will fail before the circulation.

High concentrations of cyclopropane or too rapid increases in concentration will produce laryngospasm. The severity of the laryngospasm varies in degree and duration with the individual patient. This can usually be relieved by the addition of oxygen, nitrous oxide, or helium, provided the gases are administered under slight pressure. Troublesome laryngospasm may require the use of an endotracheal tube.

Apnea may occur in the upper planes of the third stage. This usually occurs with fairly high concentrations or with rapid increases in the concentration of the gas, especially in old or debilitated individuals, and also in patients whose preliminary medication has been excessive. This, too, can be relieved by the addition of oxygen. Respiration at the normal rate can be carried on mechanically during this period by manual compression of the bag. Apneic periods may be produced intentionally and this technique may be used to advantage during the time that the abdomen is being either opened or closed, or when a common duct is being exposed.

Circulation

The pulse rate during the maintenance stage of anesthesia is usually that of the normal resting rate. If morphine has been given, the rate is, as a rule, slightly increased above the rate established after the administration of morphine. The final level in each case is much the same. The rate and volume of the pulse is well sustained until the beginning of respiratory depression, or when the blood pressure begins to decrease.

Blood pressure, too, may remain at the normal resting level of the individual patient. Rising blood pressure during anesthesia can be attributed to excess of carbon dioxide, lack of oxygen, or respiratory obstruction.

Seevers, Meek, Rovenstine, and Stiles made electrocardiographic studies of the effect of high concentrations of cyclopropane on dogs. Cardiac irregularities appeared when respirations were about to cease. The average concentration of the gas at which the irregularities appeared was approximately 50 per cent. These consisted of irregularities in nodal rhythm or ventricular extra systoles. Late effects were ventricular tachycardia and auricular and ventricular fibrillation.

Kurtz, Bennett, and Shapiro made some very interesting observations from their electrocardiographic tracings taken during surgical anesthesia. They studied 109 patients in surgical anesthesia with the commonly used anesthetic agents and found that cardiac irregularities are far more common than we have heretofore believed. Disturbances in rhythm constituted the most striking changes — sinus arrhythmias, and extra systoles, with downward displacement of the pacemaker predominating. Arrhythmias were much more frequent in abnormal hearts than in normal ones.

Some irregularities may be seen with the lower concentrations of cyclopropane. Seevers, Meek, Rovenstine, and Stiles were able to abolish these by the administration of atropine intravenously and concluded that they were probably vagal in origin or in some way favored by vagal tone.

The irregularities occurring with high concentrations of cyclopropane will usually disappear as artificial respiration is instituted or as the concentration is lowered by the addition of oxygen. These concentrations are, however, far above the anesthetic range. It is quite evident that these arrhythmias are not indicative of permanent cardiac damage, since normal rhythm returns and remains as the concentration of

cyclopropane is diminished by the addition of oxygen.

Bleeding Under Cyclopropane

Surgeons remark that some patients under cyclopropane anesthesia bleed more than those under deep ether or spinal anesthesia. This observation perhaps is partly fallacious because of the bright color of the blood due to an excess of oxygen, but there probably is more of a tendency to capillary oozing than there is with ether. This is probably due to a vasomotor effect on the small arteries and arterioles. The oozing is more superficial than deep and usually will stop when the tissue is left undisturbed. Surgeons who are accustomed to cyclopropane anesthesia seldom complain of the bleeding. I have never known of the occurrence of a hematoma or of postoperative bleeding directly attributable to cyclopropane.

Clinical Uses

Sise and his associates sum up in a very few words the clinical uses for cyclopropane in the following statement: "The combination of quiet respiration, ease of induction, and potency, together with an adequate oxygen supply, makes this anesthetic agent suitable in almost any situation in which an inhalation anesthetic is required. These factors combined with a relatively low toxicity leave very few contraindications to its use."

Its advantages are most outstanding under the following conditions:

1. When an excess of oxygen is of value:

a. Thoracic surgery. These patients are usually debilitated and pulmonary damage has caused a decrease in the absorptive surface of the lung.

b. Hyperthyroidism. The increased metabolic rate makes quite obvious the advantage of an anesthetic agent which insures an abundant supply of oxygen.

c. Respiratory obstruction. An anesthetic agent which is sufficiently potent in low concentrations and which at the same time carries with it a large supply of oxygen is of great value.

d. Cardiac disease. Immediate lightening of the anesthesia from the third plane, when a change in the circulatory mechanism takes place, is possible. This factor, combined with the fact that the oxygen supply is adequate, is of great value.

e. Anemia. With an already decreased carrying capacity for oxygen by the blood, an anesthetic agent of low toxicity combined with high concentrations of oxygen adds to the comfort of the patient and facilitates the work of the surgeon.

2. When intratracheal anesthesia is necessary. The abduction of the vocal cords which cyclopropane usually affords makes it a very valuable agent for the introduction of an intratracheal tube.

3. As a supplement to basal anesthetics.

4. Intentionally combined with spinal anesthesia or as a supplement to spinal anesthesia when it is inadequate.

5. In obstetrics. This will give assurance of adequate oxygen to both mother and fetus.

6. In abdominal surgery. The quiet respirations will facilitate exposure and thus be of great help to the operator.

7. In combination with an abdominal block or other regional anesthesias.

Postoperative Results

In 1935, Waters and his associates in reporting on 4400 anesthesias, 2200 of which were with cyclopropane, have shown by comparison that there oc-

curred a considerably lower incidence of circulatory complications with cyclopropane anesthesia than with ether or ethylene. The incidence of respiratory complications compares very favorably with results obtained following the use of other anesthetic agents. Frequency of occurrence is somewhat diminished but the mortality and morbidity associated with these complications has been definitely reduced. Nausea and vomiting are observed less frequently following major surgical procedures but are slightly more marked following short and minor procedures.

Summary

Enough experimental work has been done with cyclopropane, and it has been administered to a sufficiently large number of patients, to prove that its benefits are great and that its dangers are few. On this basis it is believed that cyclopropane has been established as a valuable agent in the anesthetist's armamentarium.

The untoward effects of cyclopropane in high concentrations on respiration and circulation have been discussed. The following precautions will be of value in preventing their occurrence:

1. The flow of gas should not exceed 500 cc. per minute and while the cyclopropane is flowing, the flow of oxygen should be at twice that rate.

2. When the cardiac rate drops below 70 beats per minute, discontinue the flow of cyclopropane and add oxygen. If relaxation is still inadequate, the addition of a small amount of ether will improve the situation. The same procedure should be followed when an irregularity of the pulse develops.

3. Beware of a marked rise in pulse rate and blood pressure. The reduction of the concentration of cyclopropane by the addition of oxygen will usually influence the return of the pulse and blood pressure toward a normal level in a short time.

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SODIUM EVIPAL AS A RECTAL BASAL ANESTHETIC

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Sodium evipal is being employed rectally as a preoperative medication, as well as a basal anesthetic for prolonged surgical procedures, with gratifying results. Evipal soluble is the sodium salt of N-methylcyclohexenylmethyl barbituric acid; it dissolves readily in water. When sodium evipal is combined with an inhalation anesthetic it allays the anxiety of the patient, accomplishes an easy induction, and promotes better relaxation, while at the same time only from one-third to one-half the usual amount of the anesthetic agent is required. The latter statement has been proved in our series of cases.

Dosage

The dose is determined with reference to the body weight, age, habits, and condition of the patient. For example, a healthy patient weighing 150 pounds would receive a dose of 30 cc. of a 10 per cent solution. The dose recommended is 0.2 cc. of a 10 per cent solution per pound of body weight. This solution is prepared by dissolving the evipal crystals in sterile distilled water-10 cc. to each gram of evipal. The mixture should be at body temperature. The dosage should be reduced for the elderly, anemic, dehydrated, undernourished and obese patient. A larger amount per pound of body weight may be required for alcoholics and the athletic individual. No other barbiturates should be used in association with, or prior to the rectal administration of evipal.

Contraindications

The contraindications are severe organic disease, dysfunction of the liver, kidneys or heart, enteritis, rectal disease, sepsis, toxemia, shock or acidosis.

Technique

Two hours before the scheduled time of operation a preliminary enema of sodium bicarbonate solution should be given, followed an hour later by 1/32 grain of dilaudid by hypodermic. If the patient is sleeping soundly from the preoperative medication of dilaudid, it is advisable to decrease the dose of sodium evipal. Thirty to forty-five minutes before operation the patient is placed on the left side and a very small catheter inserted into the rectum. The solution of evipal is injected rapidly, using a 30 cc. syringe, following which an additional 10 cc. of water is injected and the catheter clamped and left in place. Absorption of the evipal takes place slowly, consequently should there be any reason within the first fifteen to twenty minutes following injection to suspect that the anesthesia is becoming too deep, it is possible to siphon out the portion not yet absorbed, thus preventing any higher concentration of evipal in the blood.

Medication

Dilaudid is the premedication of choice, as morphine alone tends to cause respiratory depression and nausea. Scopolamine in certain instances promotes a hemorrhagic tendency in incisions of the skin and mucous membranes. In the opinion of many, dilaudid is far superior to morphine because it meets the demand for an efficient preoperative sedative, producing a minimal effect on the gastrointestinal tract; postoperative nausea and vomiting are almost entirely absent; a smaller quantity is required; and it offers the least danger of habit formation.

General Conclusions

Evipal has proved to be a satisfactory basal anesthetic for frightened and nervous individuals. Unpleasant aftereffects, such as restlessness, nausea, vomiting and headache, are decreased. No struggle or excitement of any kind is present during induction. The respirations are slow, deep and regular; the pulse is full and regular; and early muscular relaxation is obtained. Occasionally there is a temporary reduction in the blood pressure of from 10 to 30 millimeters of mercury. Postoperative drowsiness until sedatives are required is an additional advantage. It seems advisable in most cases to continue with the use of dilaudid as a postoperative medication.

Evipal has also proved a valuable premedication in cases where the patient has an idiosyncrasy to certain drugs. In order to obtain the best results, preoperative preparations should be carried out very carefully, and ample time should be allowed the anesthetist. It must be kept in mind that evipal is a slower-acting drug than avertin and must not be hurried. At no time does narcosis become as deep as with avertin.

In this series of cases nitrous oxide has proved to be the most satisfactory anesthetic to use in combination with sodium evipal as a basal anesthetic. It is not advisable to use open drop ether over a long period of time, as the margin of safety is lessened and respiratory depression and cyanosis are the unfavorable symptoms produced by too long an ether anesthesia. Coramine is a valuable stimulant in these cases.

CASES STUDIED

	No. of Cases
Dissection of axillary glands for carcinoma	1
Thoracoplasty	5
Bronchogenic cyst	1
Gastroenterostomy	3
Cholecystectomy	2
Herniorrhaphy	6
Abdominal operations	12
Hysterectomy	1
Vaginal operations	6
Resection of rectosigmoid	1
Excision of pilonidal cyst	1
Tenorrhaphy	1
First stage Lahey operation	1
TOTAL	41

Postoperative report

Slight nausea and vomiting	4
Restlessness	2
Excitement during postoperative recovery	2
Unfavorable reactions (two of these patients had accompanying complications, consequently the reaction cannot be blamed entirely on the drug)	3
Slight bronchitis	1
Acute gastric retention	1
Recovery uneventful	28
TOTAL	41

Illustrative Case Reports

No. 1

A male 30 years of age, weighing 127 pounds, was admitted to the hospital with a diagnosis of pyloric obstruction. All laboratory studies were negative, except for a trace of albumin in the urine. The patient was prepared for operation and given 1/32 of a grain of dilaudid by hypodermic at 7:30 A. M. At 8:00 A. M. a dose of 25.4 cc. of a 10 per cent solution of sodium evipal was instilled into the rectum, and the patient fell asleep in 15 minutes. Eight ounces of ether (open drop) was used as a supplementary anesthetic. Relaxation was excellent; respiration slow and deep; blood pressure remained unchanged; pulse remained good throughout the operation. A gastroenterostomy was completed in one hour and thirty minutes.

Before returning the patient to the ward, the respiration became very shallow. Carbon dioxide and oxygen were given; also one ampule of coramine. The patient responded somewhat to treatment and was removed to the ward, at which time the patient's condition became alarming. Carbon dioxide and oxygen, and coramine, were repeated and the patient placed in an oxygen tent for two hours. Four and a half grains of caffeine sodium benzoate were given after the pulse showed signs of becoming weaker. A transfusion of blood, also glucose and saline intravenously, were administered. Condition improved and patient reacted from the anesthesia at 2:30 P.M. The patient vomited several days postoperatively, due to acute dilatation of the stomach. On the sixth postoperative day the patient was improving steadily. On the eleventh day the wound ruptured and the patient was taken to the operating room for resuturing of the wound; vinethene anesthesia was used. From this time on the patient made an uneventful recovery and was discharged in good condition on the twenty-eighth postoperative day. This case was studied thoroughly and it is believed that this patient may have had an idiosyncrasy to evipal.

No. 2.

A female 23 years of age, weighing 130 pounds, was admitted to the hospital with a diagnosis of ovarian cyst. All

laboratory studies were negative. The patient was prepared in the usual manner for rectal evipal and given 1/32 of a grain of dilaudid preoperatively. Twenty cc. of a 10 per cent solution of sodium evipal was administered and the patient was sleeping soundly in ten minutes. Nitrous oxide was used as a supplementary anesthetic. Salpingectomy was completed in forty minutes. The pulse and respiration were normal; there was a slight rise in blood pressure; and excellent relaxation was obtained. The patient was returned to the ward in good condition, reacting quietly without nausea or vomiting.

No. 3

A female 20 years of age, weighing 129 pounds, was admitted to the hospital with a diagnosis of pulmonary tuberculosis. Two attempts had been made to do a thoracoplasty and each time the patient's condition had been poor during anesthesia and it was thought advisable not to continue the operation. This patient also had an idiosyncrasy to morphine, hyoscine and nembutal. The patient was again prepared for operation and was given 1/32 of a grain of dilaudid preoperatively, followed by 25.8 cc. of a 10 per cent solution of sodium evipal. The patient was sleeping soundly in five minutes after the injection of evipal. Nitrous oxide was used as a supplementary anesthetic. The pulse was of fairly good quality; the blood pressure varied slightly; the respiration was quiet and within normal limits. This patient required a high concentration of oxygen. The duration of the operation was two hours and a first stage posterior thoracoplasty was completed. Nitrous oxide was given for one hour and then discontinued. The patient was very quiet and was returned to the ward in fair condition, reacting easily without nausea or vomiting. This patient has had two additional thoracoplasties under sodium evipal anesthesia since, and is in excellent condition.

No. 4

A female 78 years of age was admitted to the hospital with a diagnosis of rectosigmoid carcinoma. Laboratory studies showed a trace of albumin in the urine, and a low red blood cell count. The heart showed myocardial damage due to coronary sclerosis. (Although evipal was contraindicated in this case, it was given, because two weeks previously an emergency operation was attempted under nitrous oxide-oxygen anesthesia and as the patient was in poor condition and difficulties were encountered, it was decided to do only a cecostomy at that time). The patient was prepared for the second operation and 1/32 of a grain of dilaudid was given preoperatively, followed by 22.2 cc. of a 10 per cent solution of sodium evipal. The pulse was normal and varied only slightly. The blood pressure dropped to 30 millimeters of mercury shortly after the anesthetic was started but returned to preanesthesia level in a very short time. Excellent relaxation was obtained and a resection of the rectosigmoid was performed in two hours. The patient was returned to the ward in good condition and awoke quietly four hours later with no nausea or vomiting. Excellent recovery.

Through the courtesy of Dr. Edward T. Crossan it was made possible to carry on the study of these cases.

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THE ORGANIZATION OF THE ANESTHESIA DEPARTMENT AT QUEEN'S HOSPITAL, HONOLULU

FRANCES GIBSON

Honolulu, Hawaii

The Queen's Hospital in Honolulu enjoys the distinction of having had a royal founder. The Hawaiian king, Kamehameha IV, appalled by the rapid decline of the native population due to disease, presented in his first message to the legislature (1855) a "plea for special consideration on the subject of establishing public hospitals". Built by popular subscription and legislative appropriation, the hospital was named in honor of Queen Emma in recognition of her active interest in the welfare of the Hawaiian people. Seventy-nine years later, the hospital has grown to accommodate three hundred patients and is accredited as a "Class A" institution by the American Medical Association and the American College of Surgeons.

A "malihini" or newcomer entering the hospital is impressed with its friendly atmosphere and excellent equipment. All services are represented, and while the work is exacting it is also very interesting. There is a wide variety of nationalities among doctors, patients and nurses. During 1938 the patients to whom anesthetics were administered — a representative cross-section of the patients admitted to the hospital—included twenty-five nationalities, of which 36 per cent were Caucasian, 15 per cent Japanese, 14 per cent Hawaiian, 12 per cent Portuguese, 9 per cent Chinese, and twenty nationalities in the remaining 14 per cent.

The first nurse anesthetist was employed in 1918. Prior to that time the anesthetics had been given by physicians. There was considerable uncertainty as to whether nurses were capable of carrying the responsibility, but this problem has been met adequately by nurses who have taken special training in anesthesia. Standards are maintained so that all members of the anesthesia staff are eligible for membership in the National Association of Nurse Anesthetists, whose members are required to have certain definite qualifications.

The anesthesia staff at Queen's Hospital consists of four nurse anesthetists. A member of the medical staff acts as consultant and supervises the instruction given to the internes. The majority of the anesthetics are administered by the nurse anesthetists, but the internes relieve in the obstetrical department when the occasion arises, and they are trained to administer nitrous oxide, ether and intravenous evipal anesthesia. The anesthesia staff is responsible for all anesthetics, including those given in the obstetrical department, and for oxygen therapy and the administration of oxygen and carbon dioxide.

Twice a month the medical consultant meets with the nurse anesthetists, at which time all interesting or difficult cases are discussed. All current anesthesia magazines are at our disposal and at each meeting a paper is presented by one of the members of the staff covering any recent developments in anesthesia. We have found these meetings both educational and helpful.

The equipment consists of six Heid-

brink Kinetometers—four in general surgery and two in the maternity department. All the gas machines except one are equipped with attachment for cyclopropane. In the maternity department the Drinker respirator is used for asphyxia neonatorum. For the infants who need continuous oxygen, it is given intranasally with a Flagg apparatus.

The oxygen for oxygen therapy is issued from the central supply room, under the direct supervision of the department of anesthesia. Continuous oxygen therapy is administered either by means of a tent, or intranasally with the use of the Heidbrink humidifier. A considerable number of the doctors order postoperative hyperventilation with carbon dioxide and oxygen.

Asthmatics are placed in an air-conditioned room, and a mixture of 75 per cent helium and 25 per cent oxygen is administered. Very beneficial results have been obtained from this treatment. Since January, 1939, the gas machines have been equipped with a helium attachment for use when a respiratory condition arises which does not respond to the usual methods of treatment.

Anesthetics—General Surgery

Nitrous oxide is used when the explosive anesthetics are contraindicated. Ethylene is used only in the City and County Emergency Unit, and in this division the anesthetics are given by an outside physician. Evipal, rectally or intravenously, is not used extensively, but cyclopropane, supplemented with ether vapor if necessary for relaxation, is being used more and more all the time. In 1938, 1,135 cyclopropane anesthesias were administered—about 50 per cent of all cases. Avertin is very popular on the neurological service, and if necessary is supplemented with ether. The usual premedication for the encephalography is nembutal grains 7½.

Anesthetics—Obstetrical

Nitrous oxide, with or without ether vapor, is used almost entirely, but at the present time cyclopropane is being introduced. Novocain, 2 per cent, with adrenalin 5 minims to the ounce, is occasionally used for the repair of episiotomy. For premedication the maternity patient may receive nembutal (orally), 1½ to 4½ grains or nembutal grains 3, plus scopolamine grain 1/150.

Methods of Administration

The closed method, utilizing the soda lime filter, is used almost routinely. Open ether is seldom employed except in the tonsillectomy and plastic operations about the face and neck. The equipment for either the intratracheal or intrapharyngeal method is available, but intratracheal anesthesia is used in only a small percentage of cases.

Premedication

The premedication most commonly used is morphine 1/6 to 1/4 grain, with atropine grain 1/200 to 1/150 given hypodermically. In addition to this the majority of our patients receive nembutal 3 grains the night before operation, which is repeated one hour before the scheduled time of operation. Avertin (80 to 90 milligrams per kilogram of body weight) is popular on certain services and if given, the preliminary medication is administered one-half hour before the avertin.

Anesthetics Administered—1938

Surgical Service		
Nitrous oxide		
Nitrous oxide-oxygen	119	
Nitrous oxide-oxygen-ether	540	659

Ether, drop		
for tonsillectomy	99	
for other services	46	145
Cyclopropane		
Cyclopropane	914	
Cyclopropane with ether vapor	221	1135
Avertin		
Avertin	18	
Supplemented with nitrous oxide-oxygen	4	
Supplemented with nitrous-oxide-oxygen-ether	67	
Supplemented with cyclopropane	68	
Supplemented with local	8	
Supplemented with ether	3	168
Evipal		
Evipal — intravenous	24	
Evipal — rectal	10	
Evipal supplemented with nitrous oxide-oxygen	2	36
Spinal		
Spinal	199	
Spinal supplemented with cyclopropane	6	
Spinal supplemented with local	7	
Spinal supplemented with nitrous oxide-oxygen	2	
Spinal supplemented with nitrous oxide-oxygen-ether	13	227
Caudal		22
Local		1066
TOTAL		3458
Obstetrical Service		
Ether		42
Nitrous oxide-oxygen, with or without ether		852
TOTAL		894
GRAND TOTAL		4352

Now for a word about Hawaii:

The first American visitor came to Hawaii in 1778, and 1820 brought the first Protestant missionaries from New England. In 1854 a treaty providing for the annexation of Hawaii to the United States was drawn up and the transfer of the sovereignty of Hawaii to the United States was effected in August, 1898.

By proclamation of the King, the Board of Health was established in 1839. There are seventy-six hospitals in the territory, with a total of 5,186 beds, and there is a leper colony on Molokai. There are 711 registered nurses, 275 registered physicians, and 185 dentists. Since 1931 midwives have been under the supervision of the Bureau of Maternal Health, and in 1935 one hundred and sixty-three registered midwives have attended 29 per cent of the births. The birth rate in 1938 was 22.2 per thousand and the average size of a family in the territory is 4.8 persons. In 1935, 7.02 per cent of the territory's population was on relief, in contrast to 13.8 per cent on the mainland.

Pidgin English is the national language; education is free and compulsory. The Hawaiian alphabet has only twelve letters; as a result one word means many things. "Humahumunukanupuapuapa" is the name of a small fish, and "aloha" means "hello" and "good-by". The directions are not spoken of as north, east, south or west, but are "ewa, mauna" (mountain), "mauka" (sea), "waikiki". Hospitality is unequaled anywhere, and an Hawaiian feast is called a "luau"; no silver or linen is used. "Poi" is the staff of life. Rain is called "liquid sunshine". "Leis" a wreath of flowers, is worn instead of a corsage.

Football is played without shoes. Ti-

leaf sliding is a popular sport—a snowless toboggan on a wet hill.

The average temperature in Hawaii is 75 degrees. On the slopes of Mauna Kea, 13,625 feet high, there is snow. There are no snakes in Hawaii. Flowers grow everywhere—gardenias sell for twenty cents a dozen; orchids grow wild and sell at twenty cents each. Words cannot express the wonders that Hawaii has in store for the visitor — the islands are called the "Paradise of the Pacific" and rightly so.

ALOHA!

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THE ANESTHESIA DEPARTMENT AND THE ANESTHETIST

ESTHER C. MYERS

Charity Hospital, New Orleans, La.

The anesthesia department of any institution is essentially an important division of hospital service. In the set-up of the hospital organization, there are various positions in which the anesthesia department may be placed. Its director and staff may be responsible to the administrator of the hospital, to the medical director, or to the chief of the surgical staff. A blue print of the organization set-up of the hospital should be provided so that the paths of authority are clearly defined and this blue print should answer the questions: Where does the anesthetist fit into the organization? To whom is the anesthetist responsible? How does she obtain supplies? Who is the person who will support her in insisting on carrying out the rules of the anesthesia department?

In well-organized institutions the administrator, if a layman, employs the anesthetist upon recommendation of the medical director or the surgeon who is directly responsible for the anesthesia department. At the time of her employment, the nurse anesthetist should be fully informed in regard to the paths of authority, her duties, and the institution's policies, in simple and accurate terms, to avoid the possibility of a misunderstanding.

The anesthetist's primary duty is to serve the patient, the surgeon, and the obstetrician. How can the nurse anesthetist serve to the maximum efficiency? There must be perfect harmony between the operating room or the delivery room staff and the anesthetist to bring about spontaneous cooperation, which is compatible with efficiency. In order to obtain unified dovetailing of duties, each member of these departments should have a clear conception of her individual responsibility.

Hospitals should be operated and managed in the same efficient manner as any other business enterprise. There should be, as in the non-professional departments, a job analysis for each worker, from which definite standards are established as to where, when, and how each particular piece of work is to be executed.

Smooth functioning of the medical and nursing departments is just as important, if not more so, than that of the

dietary, housekeeping, or laundry departments. Even with strict adherence to ethical standards, complete cooperation cannot reach its maximum until all of the hospital personnel have a definite understanding of their individual routine and emergency duties.

How can the activities in the operating and delivery rooms be synthesized to produce harmonious, stimulating, and efficient cooperation? It is by knowing who is responsible for the following duties:

1—Notifying the anesthetist of a scheduled operation or delivery, and seeing that the call is "followed through";

2—Taking the patient to the operating room;

3—Position of the patient on the table;

4—Watching the patient before and during the induction of the anesthesia;

4—Carrying out emergency orders during the anesthesia;

6—Moving the patient to the stretcher;

7—Returning the patient to his room and reporting the patient's condition to the head nurse;

8—Cleaning anesthesia tables and apparatus.

The above are just a few of the duties that should be outlined.

The anesthetist contacts ward personnel when she visits the patient before and after an operation. In doing so, perfect performance of duty is maintained by everyone when all are striving equally to make the patient comfortable. It is the duty of the anesthetist to make every effort to see the patient before administering the anesthetic so that the type of patient he may be for anesthesia can be anticipated. The second purpose of this visit, which in many cases is the more important one, is to correct any mistaken ideas the patient might have in regard to the anesthetic. I recall an experience as a student, with a patient who dreaded the anesthetic more than the operation. I should like to use it as an illustration of the importance of seeing the patient before he goes to surgery.

The patient told me the anesthetic experiences of friends which were related to him when they learned of his pending operation—the struggle caused by the pungent odor of the ether, and the secrets revealed while reacting. I tried to console him by telling him that all patients take an anesthetic differently; but it was impossible for me to cope with the situation scientifically, for two reasons: First, the few lectures I had received on anesthesia were no aid in the present circumstance. Second, I was laboring under the same phobias. Consequently, sympathy was the only device I could use in attempting to comfort the patient. Knowing that I had not relieved the old man of his worry any more than had his surgeon, who simply said, "You'll be all right; forget it," I was distressed until the nurse anesthetist walked into the room, at which time it was my duty to leave. Instead, I found something to keep me so that I might listen to what she told him. In her soft and convincing voice, she explained the difference between gas and ether and described the pleasant sensation of floating on clouds that he would experience under the gas anesthesia. It had a magic effect on the patient, and the knowledge that he would be asleep from gas before taking ether and that he would awaken as from a normal sleep was more effective than a dose of opium.

The anesthetist also visits the patient postoperatively. Efficient postoperative follow-up of all patients is desirable to determine end results relative to the

type of anesthetic administered. After an anesthetist has been with a patient for ten minutes or for five hours, she has another motive in visiting him and reading his chart — to enjoy the gratification that comes from knowing that the patient has reacted favorably from the anesthetic.

The assistance and cooperation of the medical staff is needed for the perfect discharge of the anesthetist's duty. Their responsibility is to see that a complete physical examination of each patient with laboratory findings is made and recorded immediately before a general anesthetic is administered, and the patient's condition evaluated to give a clear picture of the anesthetic risk. Without this information, the anesthetist is at a disadvantage. The report of the physical findings, the results of the laboratory examination, and the statement made relative to the risk, govern the type of anesthetic which the surgeon chooses and the method of administering it. Only by the use of the best type of anesthetic and the method of administration indicated, can a satisfactory anesthesia be expected. The success of the operation depends greatly upon this choice, as well as upon the skill with which the anesthetic is given.

All factors mentioned indicate that only when doctors, nurses, and anesthetists have a true conception of each other's duties, can the department of anesthesia function efficiently.

Who is the nurse anesthetist?

1—She is a nurse graduated from a recognized school of nursing.

2—She is a nurse who usually knows nursing organization from the roots. Most anesthetists have done private duty and institutional graduate staff nursing before entering the field of anesthesia, consequently the problems and duties of these respective nursing specialties are familiar to her.

3—She is a nurse who has had a broad and intensive training in the theory and art of administering all types of anesthetics for all kinds of operations. The administration of anesthetics by nurses includes all those which are not given by the spinal and intravenous methods.

4—She is an active member of the State and National Associations of Nurse Anesthetists.

5—She is employed by the hospital administrator and is directly responsible to him or to a member of the medical staff.

6—From the standpoint of organization in the hospital, the nurse anesthetist is in a large measure a department head. She is the sort of person who commands the respect of other department heads as a person unusually skilled and she must be able to justify and to maintain such respect.

7—The nurse anesthetist administers anesthetics under the orders and by the direction of the surgeon or obstetrician.

The department of anesthesia itself must have a plan of organization to promote the best attitude among the individual anesthetists. The member chosen to be the chief of the department has specific functions as well as do her assistants. Unless each anesthetist's duties are differentiated by a rather clear line, they are likely to enter into personalities before realizing it. Therefore it is necessary to have the differentiation, the outlining of duties, and the drawing of emergency duty border lines.

The kind of service the anesthesia department offers depends largely on the type of equipment that is available; to

use obsolete apparatus is necessarily to give inferior service, and the patient and the surgeon will not benefit by the use of the newer anesthetics on the market, in as much as some of them require specially constructed machines. Another item to be considered is the high per capita cost with the use of old equipment. It is also essential to have an adequate supply of the necessary material at hand to avoid delay in carrying out the surgical schedule.

In the final analysis it falls to the lot of the administrator to assist in accomplishing these ideals. Since the administrator is the executive head of the hospital and responsible to the governing body for efficient management, he has certain duties to perform that will coordinate the activities of the entire organization and will promote the general welfare of the personnel. It is his duty to see that policies laid down are followed. He must therefore, transmit and interpret them to the medical staff and personnel. If the administrator coordinates the activities of the departments within the organization, then clashing of interest or overlapping of time and effort will be prevented. This can be hoped for by establishing a schedule of the routine and emergency duties for each member in the hospital. When the paths of authority and the activities of the departments are clearly understood by the personnel and when proper equipment has been provided, the hospital management can expect efficient service.

Summary

The following principles, when applied, will insure efficient anesthesia service:

1—A well organized anesthesia department under the direct supervision of a competent medical staff member.

2—An adequate staff of competent assistants.

3—A record should be made of the patient's physical condition and laboratory findings before a general anesthetic is administered. Factors which increase the operative risk should be stated on the anesthesia chart by the surgeon or obstetrician.

4—An adequate supply of reliable equipment should be furnished.

5—Detailed records of all anesthetics administered should be kept.

6—Patients should be seen both before and after operation and the anesthetist's impressions recorded on the chart.

7—Because of known explosion hazards in the administraton of anesthetics, definite safeguards are necessary in the use of the various general anesthetics. Not only should these safeguards be provided, but it is also necessary to educate the personnel to see that all the preventive measures are carried out.

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1. Malcolm T. MacEachern, M.D., "Hospital Management and Organization." 1935 ed.
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3. Lectures by Dr. MacCurdy, Columbia University, Teachers' College, New York, N. Y.

ACTIVITIES OF STATE ORGANIZATIONS

CALIFORNIA

The California Association held its last meeting before the summer vacation period, on May 9, 1939, at Peralta Hospital, Oakland, Cal., with thirty members present. Regular meetings will be resumed in September.

Miss Martha Bichel, President of the California organization, was appointed a delegate to the annual convention of the National Association to be held in Toronto, Canada, in September.

MARTHA BICHEL
President

COLORADO

A special meeting of the Colorado Association of Nurse Anesthetists was held at the Colorado General Hospital, Denver, on April 15, 1939. The business meeting was followed by an interesting and stimulating discussion of problems in anesthesia, including "The Choice of an Anesthetic Agent." Miss Louise Bowden demonstrated a new carbon dioxide detector for determining the percentage of carbon dioxide in a closed system gas machine.

Seven new members have been added to the Colorado Association in the last five months.

MAY MORCOM CARPENTER
President

INDIANA

The third annual dinner meeting of the Indiana Association of Nurse Anesthetists was held at the Aulton Hotel, in Ft. Wayne, on May 10, 1939. Miss Anna Willenborg, Executive Secretary of the National Association of Nurse Anesthetists, was the guest speaker.

The following officers were elected for the coming year:

President—Thelma A. Deane
Logansport, Ind.

Vice-President—Inez Warnock
Moore Clinic, Muncie, Ind.

Secretary-Treas.—Agnes M. Lange
326 Arcadia Court
Ft. Wayne, Indiana

Trustee (3-year)
Margaret P. Church
1016 Garden St.
Ft. Wayne, Ind.

THELMA A. DEANE
President

MABLE COURTNEY
President

MICHIGAN

The second annual meeting of the Michigan Association of Nurse Anesthetists was held in the Educational Building, Henry Ford Hospital, Detroit, on June 3, 1939. Miss Esther Meil presided at the general session, at which forty-six were present. The opening address was given by Roy D. McClure, M.D., Chief Surgeon, Henry Ford Hospital, Detroit, and the following appeared on the program:

"Trend of Anesthesia"
Myra Babcock, M.D.
Chief Anesthetist,
Grace Hospital, Detroit

"Laryngeal Spasm"
Fenimore Davis, M.D.,
Chief Anesthetist, University of Michigan Hospital, Ann Arbor

"Analgesia in Obstetrics"
Jean Paul Pratt, M.D.,
Chief, Gynecology and Obstetrics, Henry Ford Hospital, Detroit

"Report of Postoperative Massive Atelectasis"
B. M. Hamil, M.D.,
Department of Pediatrics, Henry Ford Hospital, Detroit

"Conduct of Spinal Cases"
Jean Walsh, Providence Hospital, Detroit
Ethel Moir, Henry Ford Hospital, Detroit
Margaret Coles, St. Mary's Hospital, Detroit

An active discussion followed, and the group enjoyed a delicious dinner at Huyler's, with a musical program furnished by a violinist and pianist from the Detroit Conservatory of Music.

The following officers were elected for the year:

President	Mable Courtney Grace Hospital, Detroit
First Vice-President	Gertrude Myers St. Mary's Hospital, Detroit
Second Vice-President	Lillian G. Baird University of Michigan Hospital, Ann Arbor
Secretary-Treasurer	Ione Wessinger Ford Hospital, Ann Arbor

MINNESOTA

The May Official Bulletin of the Minnesota Association strengthens our impression that the Minnesota group is one of the most active state organizations of the twenty-three now affiliated with the National. Regular meetings were held in January, February, March and April and the meetings have been well attended. At the March meeting Mr. Rowell gave a most interesting talk on "Fire Hazards in Anesthesia." At the April meeting Katherine Jurgensen, Swedish Hospital, Minneapolis, read a paper on "Cyclopropane," followed by a discussion.

The Treasurer reports that following the two series of lectures given by Dr. Ralph Knight in February and March, which were attended by seventy-six anesthetists, a net balance of $210.00 was realized for the Association.

The fifth annual meeting of the Minnesota Association was held at the Saint Paul Hotel, St. Paul, Minn., on May 26, 1939. At 9 A.M. a joint meeting was held with the Minnesota Hospital Association, at which Gertrude Fife read a paper on "Organization of an Anesthesia Department." The morning session was followed by a joint luncheon, at which interesting talks were given by Dr. Bert W. Caldwell, Executive Secretary of the American Hospital Association; Dr. Malcolm T. MacEachern, Associate Director, American College of Surgeons; and Dr. R. C. Buerki.

Alice L. Anderson, President of the Minnesota Nurse Anesthetists' Association, presided at the general session in the afternoon. Greetings were extended by Peter D. Ward, M.D., Charles T. Miller Hospital, St. Paul, President of the Minnesota Hospital Association. The following papers were read:

"The Thoracic Surgeon's Problems in Anesthesia"
Thomas J. Kinsella, M.D., Assistant Professor of Surgery
Medical School, University of Minnesota, Minneapolis

"Gas Anesthesia"
Edward B. Tuohy, M.D.
Section on Anesthesia, Mayo Clinic, Rochester

"Anesthesia in Surgery of the Heart"
Gertrude L. Fife, Treasurer, Nat'l Association of Nurse Anesthetists
University Hospitals, Cleveland, Ohio

General discussion
Ralph T. Knight, M.D.
Director, Division of Anesthesia, University of Minnesota, Minneapolis

6:30 P.M.—Banquet—All groups

Officers elected for the coming year:

President	Alice L. Anderson Minneapolis General Hospital, Minneapolis
Vice-President	Marie Petrowske Ancker Hospital, St. Paul
Secretary	Dorothy L. Koch Minneapolis General Hospital, Minneapolis
Treasurer	Grethe Westly 1412 E. 24th St., Minneapolis

The following delegates were appointed to attend the National meeting in Toronto, Canada: Alice L. Anderson, Julo Slattendale, Borghild Grebstad.

MISSISSIPPI

The fourth annual meeting of the Mississippi Nurse Anesthetists' Association was held in the Radio Room of the Great Southern Hotel, Gulfport, Miss., on May 9, 1939.

General Session

"Cyclopropane as Viewed by the Surgeon"
Augustus Street, M.D., Vicksburg, Miss.

"Choice of the Anesthetic; Anesthetic Emergencies"
E. A. Trudeau, M.D., Biloxi, Miss.

Report of the Southeastern Nurse Anesthetists' Assembly
Mrs. Sam Owen, Electric Mills, Miss.

"Anesthesia in Children"
E. Bolton, M.D., Gulfport, Miss.

"Why Belong to Professional Associations"
Mary H. Trigg, Greenwood, Miss.

"Combined Duties in Small Hospitals"
Mrs. Sam Owen, Electric Mills, Miss.

Business Session

The Association voted unanimously to accept the invitation to join the newly organized Southeastern Assembly of Nurse Anesthetists.

The following were appointed to represent the Mississippi Association at the seventh annual meeting of the National Association of Nurse Anesthetists, which will be held in Toronto, Canada, September 26-29, 1939: Elizabeth Wates, Jackson, Miss.; Margaret Mary Angland, Laurel, Miss.; and Mrs. Sam Owen, Electric Mills, Miss.

Officers elected for the year:

President	Elizabeth N. Wates Mississippi State Sanatorium, Jackson, Miss.
First Vice-President	Ruth Perry Glass Methodist Hospital, Hattiesburg, Miss.
Second Vice-President	Hettye Ellsey Meridian, Miss.
Secretary-Treasurer	Susie May Collins c/o Drs. Trudeau and O'Mara, Biloxi, Miss.
Committee Chairmen:	
Membership	Margaret Mary Angland
Nominating	Margaret Lechner
Program	Mrs. Sam Owen

NEW YORK

At the sixth annual meeting of the New York Association of Nurse Anesthetists held in New York May 17-19, 1939 (program published in full in the May issue of the Bulletin) the following officers were elected:

President (re-elected)
Hazel Blanchard
1910 Seventh Avenue, Troy, N. Y.

Vice-President (one year—unexpired term)
Frances Hess
Long Island College Hospital, Brooklyn, N. Y.

Secretary (re-elected)
Dorothy N. Calder
Yonkers General Hospital, Yonkers, New York

Treasurer (re-elected)
S. Louise FitzGerald
815 Seward St., Rochester, N. Y.

Historian	Pauline E. Lapinsky Long Island College Hospital, Brooklyn, N. Y.
Directors—2 years	Clara G. Bieber Woman's Hospital, New York City Ada M. Graham 141 West 109th St., New York City Frances E. Rabinowitz Staten Island Hospital, Staten Island, N. Y.

The seventh annual meeting of the New York Association will be held in New York City in May, 1940; date to be announced later.

OKLAHOMA

The Oklahoma anesthetists held their annual mid-year meeting at the Wesley Hospital Nurses' Home in Oklahoma City, on June 8th, 1939. Dr. George S. Mechling spoke on "Spinal Anesthesia," and Dr. J. A. Robinson on "Anesthesia in Obstetrics." Following the business meeting a delicious dinner was served at Hearn's Cafe.

OREGON

The Oregon Association of Nurse Anesthetists completed the winter season with the annual banquet held on May 27th in Portland. Regular meetings will be resumed in the fall.

The "Osanagram" has been selected as the name for the state bulletin. Many favorable comments have been received from the out-of-town members expressing their interest in this monthly publication.

PENNSYLVANIA

The following is a condensed report of the business session of the eighth annual meeting of the Pennsylvania Association of Nurse Anesthetists, held in Philadelphia, April 26 and 27, 1939:

Hiss Hilda R. Salomon, Jewish Hospital, Philadelphia, has offered a prize of $10.00 for the best paper on anesthesia written by a student anesthetist. The winning paper will be presented at the next annual state meeting. All students wishing to enter the contest may send their papers to Mrs. Helen Young Walker, Secretary-Treasurer of the Pennsylvania Association of Nurse Anesthetists, 1824 Wallace Street, Philadelphia. All papers will be submitted to and judged by the National Educational Committee.

EDITH E. ABARY
— President

Report of Secretary

Members in good standing April 1, 1939	204
Members in good standing April 1, 1938	199
Delinquent members:	
April 1, 1938	44
April 1, 1939	55
(paid between April 1 and 18, 1939—25 members)	
Resignations	1
Members dropped because of failure to pay dues three years or more	27
Members transferred to Pennsylvania	15

Members transferred out of Pennsylvania		20
Bills mailed January 1, 1939 (11 new members included)		259
Bills mailed April 1, 1939		55
Correspondence received — pieces		556
Correspondence sent — pieces		850

Treasurer's Report

Balance on hand April 1, 1938		$ 1,007.95
Receipts		
Dues	$1,447.00	
Initiation Fees	40.00	
Dues received from National Association for members transferred into Pennsylvania	5.00	
Dues refunded for overpayment to National Association	5.00	
Dues overpaid — members	4.50	
Initiation fee overpaid — member	1.00	
Pin	1.00	
Total Receipts		$ 1,503.50
		$ 2,511.45
Disbursements		
Remittances to National Association of Nurse Anesthetists:—		
Dues	$ 918.25	
Initiation fees	41.00	
Dues paid for members transferred out of Pennsylvania	18.00	
Pin	1.00	
	978.25	
Dues Overpaid—refunded to members	4.00	
Initiation fee overpaid—refunded	1.00	
Office expense	109.37	
Convention expense	276.35	
Total Disbursements		1,368.97
Balance on hand March 31, 1939		$ 1,142.48
Represented by:		
Balance on Deposit at Central-Penn National Bank		$ 1,142.48

(Financial records audited by George K. Watson & Company, Certified Public Accountants, Philadelphia, Pa.)

Officers:

President	Edith E. Abary Harrisburg Hospital, Harrisburg

First Vice-President	Grace Williams Allegheny General Hospital, Pittsburgh
Second Vice-President	Edith Davis Allentown Hospital, Allentown
Secretary-Treasurer	Helen Young Walker 1824 Wallace Street, Philadelphia

Trustees

1938-1940	Ida McK. Emerick Rochester General Hospital, Rochester Lucille McLaughlin Westmoreland Hospital, Greensburg Magdalene Suter Girard College Infirmary, Philadelphia
1939-1941	Mary E. Miller York Hospital, York Madeleine M. King 848 Park Avenue, Meadville Esther Kissell Harrisburg Hospital, Harrisburg

Committees:

Membership	Irene Whitman, Chairman Frankford Hospital, Philadelphia Hilda R. Salomon Jewish Hospital, Philadelphia Sylvia Cole Jefferson Hospital, Philadelphia
Education	Mrs. Marian Robinson Briggs, Chairman 309 Mattison Ave., Ambler, Pa.
Revisions	Rose G. Donovan, Chairman Mt. Sinai Hospital, Philadelphia
Public Relations	Margaret M. Degutis Pottsville State Hospital, Pottsville Edith Davis Allentown Hospital, Allentown Anna Machusak Policlinic Hospital, Harrisburg
Publicity	Frances Wolak, Chairman St. Francis Hospital, Pittsburgh
Program	Committee to be appointed in early fall

TENNESSEE

The annual meeting of the Tennessee Association of Nurse Anesthetists was held in Memphis, Tenn., February 15-16, 1939, in conjunction with the Mid-South Post Graduate Nurse Anesthetists' Assembly. The following officers were elected:

President	Gertrude Alexander Troster 654 Stonewall Place, Memphis
Vice-President	Minnie E. Swetman U. S. Marine Hospital, Memphis
Secretary-Treasurer	Jewelle C. Fink Physicians' & Surgeons' Bldg., Memphis
Board of Directors	Ruthie E. Hawne Mrs. Theresa W. Trail Minnie E. Swetman
Committees:	
Membership	Alice M. Sims Ada Hemsley Mazie Caldwell
Program	Elinor Birkhead Cook Dorothy La Rue Bess Turner
Legislation	Alice M. Sims Betty Gilmore
Education	Grace Skinner Margaret Houser
Finance	Mattie Mockbee Nettie Bryant

TEXAS

The fourth annual meeting of the Texas Association of Nurse Anesthetists was held at the Hotel Texas, Fort Worth, April 21 and 22, 1939. Forty-five enthusiastic members were in attendance, and the Texas anesthetists are very proud of the rapid growth of their Association. The original list of thirty-six members has been increased to seventy-five, twenty-five of these having been added in the last year.

Mrs. E. Lee Paternostro of Dallas, presided at the morning meeting on April 21st. The invocation was given by the Rev. Douglas Hudgins of Fort Worth, and greetings were extended by the President, Mrs. Elvie Shaver, and by Mrs. Josie Roberts of the Methodist Hospital, Houston, President of the Texas Hospital Association.

SALLIE F. KNIGHT
President

Papers were read as follows:

"Fifteen Years of Anesthesia at Torbett Clinic and Hospital"
Sarah Kirvin, Torbett Hospital, Marlin

"Postoperative Atelectasis"
Sallie Knight, Baylor University Hospital, Dallas

An interesting round table discussion was conducted by Mrs. Velma Thompson of Baylor University Hospital, Dallas, including the technique of the administration of cyclopropane, helium and avertin.

At the afternoon session Dorothy Hoadley, of the Harris Memorial Methodist Hospital, Fort Worth, presided, and the following papers were read:

"Anesthesia in Lung Complications"
Sidney Stout, M.D., Fort Worth

"Endotracheal Anesthesia"
Elvie Shaver, John Sealy Hospital, Galveston

"Airways"
Laura Hoffman, Fort Worth

"Stimulants"
Lois Rhodes, Scott-White Hospital, Temple

The Texas Association wishes to express its appreciation to the anesthetists in Fort Worth for their efforts in making the meeting a success, and for the hospitality extended to the state group during the meeting.

Officers elected:

President	Sallie F. Knight Baylor University Hospital, Dallas
Vice-President	Laura Hoffman 920 — 5th Avenue, Fort Worth
Secretary-Treasurer (re-elected)	Marcella Ann Cable Clinic Hospital, San Angelo
Trustee	Dorothy Hoadley Harris Memorial Methodist Hospital, Fort Worth

WASHINGTON

The two sections of the Washington Association of Nurse Anesthetists—the Eastern and Western Divisions—have held meetings each month since the organization meeting in February. The minutes of each group have been exchanged and read at the meetings as planned. Excellent programs have been carried out, the attendance has been very good and the members are enthusiastic and interested. Regular meetings have been suspended for the three summer months and will be resumed in September.

WISCONSIN

The February meeting of the Wisconsin Association was held at Deaconess Hospital, Milwaukee, at which routine business was taken care of, followed by a round table discussion on subjects pertaining to anesthesia. Following the meeting refreshments were served.

In May a dinner meeting was held in Milwaukee, at which plans were discussed for the annual meeting to be held in Wausau on October 14th. Miss Catherine Cameron, Past President, gave a report of the Tri-State meeting which was held in Chicago, and Miss Martha Magnin read a paper on "Explosion Hazards."

It was voted to pay the round trip fare of one delegate to the National convention in Toronto in September.

ORGANIZATION OF SOUTHEASTERN ASSEMBLY OF NURSE ANESTHETISTS COMPLETED

The first inter-state group of anesthetists was organized in Tennessee several years ago, under the name of the Mid-South Post Graduate Nurse Anesthetists' Assembly, bringing together the anesthetists from neighboring states for yearly educational conferences. These larger groups afford the opportunity to obtain as speakers distinguished and outstanding men, making possible more interesting and varied programs, and stimulating a greatly increased attendance.

The newly organized Southeastern Nurse Anesthetists' Assembly (comprising the anesthetists in Alabama, Georgia and Florida), is the second such group formed. Mississippi and Louisiana were invited to meet with the group annually and at a meeting held on May 9th the Mississippi anesthetists voted unanimously to accept the invitation.

The program of the organization meeting held in Jacksonville, Florida, in April, in conjunction with the Southeastern Hospital Conference, was published in full in the May issue of the Bulletin. We regret that space is not available to publish in this issue all the papers presented.

Miss Alpha Schier, of Duval County Hospital, Jacksonville, in her Address of Welcome expressed the gratification of each individual in this large body in being afforded the opportunity to become personally acquainted, to learn of each other's work and to profit by the exchange of thoughts and ideas. Miss Schier gave special recognition to the untiring efforts of those who worked to make the meeting a success—Miss Anne Beddow, Birmingham, Ala., Mrs. Rosalie McDonald, Atlanta, Ga., Mrs. Ida Ellis, Orlando, Fla., and Miss Mary Parks of Tuscaloosa, Ala. In conclusion Miss Schier stated her conviction that the group, when the conference was concluded, would feel well rewarded for the time, sacrifices and efforts expended; and ended by asking those visiting Jacksonville for the first time, to take full advantage of the opportunity to see that lovely city and make their stay a source of profit and pleasure. Miss Schier stated that Miss Agatha Hodgins, Honorary President of the National Association, upon invitation from Mrs. Ida Ellis, President of the Florida Association, would be present at various meetings of the conference, and the group felt highly honored in having her with them.

Miss Verna M. Rice, of Mobile, Ala., a charter member of the National Association of Nurse Anesthetists, who is active in both the National and State groups, in responding to the welcome by Miss Schier, expressed the thanks of the delegates from all the states represented, for the friendly greet-

ing and warm hospitality extended by the anesthetists of this historic city. She stated further, "One of the greatest pleasures of this occasion is the renewing of old friendships and the making of new friends. Among them none has a greater claim upon our love and loyalty than our Honorary President, Agatha C. Hodgins. This very regional conference of the National Association of Nurse Anesthetists is a tribute to her foresight, for it was she who formulated our present organizational outlines and who worked, as far back as 1931, with the hope that we would sometime hold just such a divisional meeting as we are having here today. . . . . I would recall to your attention the statement of our Past President, Hilda R. Salomon, in regard to the importance of organization: 'The application of knowledge gained through education is the real measuring stick of one's worth in the world, and the actual working out of that knowledge can receive no greater impetus than through the contacts with fellow workers.'" In conclusion Miss Rice said, "Already we have surrendered ourselves to the agreeable analgesia of your ocean breezes, and the pleasant prophylaxis of your Florida sunshine, about which we have heard so much. I am sure that each one of us, as she returns to her more prosaic duties, will carry with her the memory of this meeting as one of her treasured souvenirs."

As founder of the National organization, any comments from Miss Hodgins are always of great value, and we are publishing below in full Miss Hodgins' talk in Jacksonville:

The inauguration of the new Southeastern Assembly of Nurse Anesthetists, if such takes place, will mark another milestone in the educational progress of State Associations. As a trustee of our National Association, I am deeply interested in all that pertains towards establishing better understanding of problems relative to the general advancement of anesthesiology throughout the country, through the medium of our National Association, and its affiliated State Associations. In accomplishing this I know of no better way, than that which you are now thinking of adopting—the affiliation of related state groups into an educational assembly, devoted to the object of clarifying by constructive discussion, the constantly changing aspects of anesthesiology, so that an increasingly high standard of anesthetic service may be given *by* nurse anesthetists *to* the hospitals which they serve. Impinging on this there will be, I am sure, a deepening interest in national plans concerned with establishing still better educational standards for the student nurse anesthetist and with insuring security of professional status to the qualified graduate nurse anesthetists.

It is particularly fitting that the yearly conference of such an assembly should be held in conjunction with a major Hospital Conference, a body which, while dealing with larger issues, is particularly interested in the development and progress of special divisions of hospital service. This joint meeting will therefore bring about, much more speedily than separate state meetings (important as these are) could possibly do, a clearer understanding not only of common problems incident to daily service, but will add immeasurably to the spirit of enthusiasm and cooperation, without which no true progress can be made.

As a group, nurse anesthetists have great reason to appreciate the helping hand, extended to our National organization by the American Hospital

Association, and this joint meeting with the Southeastern Hospital Conference gives further evidence of that friendly spirit.

There are other and further advantages that will accrue from your joint meetings; one of the most stimulating and valuable will be the yearly opportunity for your group to make pleasant contacts with members of other departments of service. This it seems to me will greatly help towards making a reality that 'esprit de corps' so necessary to efficient hospital management—the successful establishment of which is perhaps, on final analysis, the secret of permanent success for both the individual and the organization. However, the most immediate and permanent advantage of this—shall we say educational affiliation—will be the stimulus and interest imparted to each separate state association, not only in developing its particular part of the yearly program, but also in a growing realization of the importance of such to the work as a whole. State leaders trying to hold the interest of small state groups will appreciate to the full just what this will mean. Problems which loomed large will be dissolved into proper proportions by helpful discussions. As I see it, you will *divide* your difficulties and *multiply* your successes—a very satisfactory principle to work on and one that will constantly tend towards better control of circumstances and make for sound, progressive growth.

As one sincerely and deeply interested in a secure future for nurse anesthetists I realize this can be brought about only by the development of strong State Associations, distributing responsibility, so that leadership may be developed, and with maintaining close, cordial cooperation with National Headquarters, so that the work as a whole may go harmoniously forward to the full attainment of our national objectives. Among the many fine things I am confidently expecting the proposed Southeastern Assembly to accomplish, is the development of such idealistic, sincere and practical leadership, as will make this expectancy a reality.

AGATHA HODGINS

ALUMNAE ASSOCIATION

UNIVERSITY HOSPITALS SCHOOL OF ANESTHESIA, CLEVELAND, OHIO

On June 16th a tea was given for the staff and students of the University Hospitals School of Anesthesia, at the home of Mrs. John A. Hadden, Chairman of the Anesthesia Committee of the Board of Trustees of the University Hospitals. The group was thrilled with the extreme beauty and charm of the garden surrounding Mrs. Hadden's home, and those students who attended will leave the University Hospitals with pleasant memories of the warm friendliness and gracious hospitality of their hostess on this occasion.

During the spring Miss Ella Foerstel, of St. Luke's Hospital, Tokyo, Japan, spent several weeks in the anesthesia department to become acquainted with the anesthesia set-up at the University Hospitals. She will return to Japan in the fall. During her stay at the University Hospitals Miss Foerstel endeared herself to the students and staff and those who knew her wish her success and happiness in her future work. We hope that Miss Foerstel will visit the University Hospitals when she again returns to this country.

ANNUAL MEETING

The annual business meeting will be held in Toronto, Canada, in conjunction with the National Association of Nurse Anesthetists, on Tuesday, September 26, 1939, 1:00 to 2:00 P.M. There are important problems to be discussed and we therefore hope that all Lakeside graduates will make a special effort to attend. The Alumnae Association has made outstanding contributions to the school, and the continued interest of our graduates in the Alumnae Association is a potent factor in maintaining the reputation that the University Hospitals (Lakeside) School of Anesthesia has enjoyed during the past.

A report of the activities of the school will be given by Mrs. Fife at the joint luncheon which will be held on Thursday, September 28th, at the Hotel King Edward.

We are very happy that the Alumnae Association of the Schools of Anesthesia of Long Island College Hospital, Brooklyn, and Jewish Hospital, Philadelphia, will participate in the joint luncheon, and reports of the activities of those schools will be given by Mrs. Frances Hess and Miss Hilda R. Salomon, Directors of the respective Schools of Anesthesia.

May 8, 1939

To Chairman Publishing Committee

Dear Mrs. Fife:

May I express my happiness at seeing in the last issue of the Bulletin a truly lovely photograph of Alice MaGaw-Kessel and notice of her published contribution as a nurse anesthetist. I never had the pleasure and profit of seeing Alice MaGaw's fine work, but am of course very familiar with the article, now reprinted, as the first published article by a nurse anesthetist.

Some thirty odd years ago the Mayo Clinic was deservedly famous, among other achievements, for its "drop ether method." Early in my career, 1909 to be exact, I visited that clinic, and was much impressed with the smooth, easy technique instituted by Miss MaGaw, and then practiced with great skill by her successors, Florence Henderson, Mary Hines and Ann Powderly—all of whom were pioneers in the work.

It is my hope that the Bulletin may be able from time to time to emphasize to our members, some of the other pioneers, who in their own particular sphere and state have done so much to advance our profession. This would, I believe, create a fine tradition of service from the different states and foreign outposts, and make such, a permanent contribution to the history of our National Association, through the medium of its official journal.

Another suggestion—and it is only such—I think, if possible, a copy of the photograph of Mrs. Kessel should be obtained for National headquarters. I am sure we would *all* like to see the picture of our first nurse anesthetist contributor—where it belongs in the center of our activities.

I would appreciate, if you could spare space in your column for this letter —a lesser but equally sincere tribute to Alice MaGaw.

Sincerely yours,

(signed) AGATHA C. HODGINS

OFFICIAL NOTICE

June, 1939

The members of the National Association of Nurse Anesthetists are hereby notified that the Articles of Incorporation of the National Association of Nurse Anesthetists will be amended to meet the needs of the Association according to the law of the State of Ohio under which the National Association of Nurse Anesthetists is incorporated, at the Annual Meeting to be held in Toronto, Canada, Sept. 25-29, 1939.

Revisions and amendments to the Code of Regulations will also be presented at this meeting.

These revisions and amendments will be presented at the Business Session of the Annual Meeting, Tuesday afternoon, Sept. 26, 1939, for consideration by the members assembled.

No further announcement will be made.

The above is a notification of the revision and amendments to be presented by the Revisions Committee at that time.

Signed HAZEL BLANCHARD, Chairman
HELEN L. PATTEN
CORA MCKAY
Revisions Committee of the National
Association of Nurse Anesthetists

NOTICE

Graduates of the School of Anesthesia, Jewish Hospital, Philadelphia, who expect to attend the convention please notify Miss Hilda R. Salomon.

In Memoriam

Miss Elizabeth R. Plumb, who received her training in anesthesia at the University Hospitals of Cleveland, Ohio, and was for the last five years employed at the City Hospital, Welfare Island, N. Y., died on April 2, 1939. She had been a member of the National and New York Associations of Nurse Anesthetists since their organization.

Members National Association of Nurse Anesthetists

July 20, 1939

ALABAMA

Allen, Lola	Hillman Hospital	Birmingham
Beddow, Annie M.	Norwood Hospital	Birmingham
Bradford, Elizabeth	South Highlands Infirmary	Birmingham
Burnes, Sarah Ola	Forrest General Hospital	Gadsden
Campbell, Bernice	1131 — 28th St., N.	Birmingham
Foto, Stephanie	St. Vincent's Hospital	Birmingham
Foust, Alma Clyde	Colbert County Hospital	Sheffield
Gaylord, Mrs. Nathalie B.	Frasier-Ellis Hospital	Dothan
Hill, Mrs. Emily McClinton	Bellamy Hospital	York
Holmquist, Edith	South Highland Infirmary	Birmingham
Kilpatrick, Mrs. Wanita H.	1606 South 12th Ave.	Birmingham
Long, Mrs. Wm. Walker	R. D. No. 2, Grant Mill Road	Birmingham
Maenner, Rose E.	59 Le Moyne Place	Mobile
O'Curran, Irene E.	St. Vincent's Hospital	Birmingham
O'Dell, Mrs. Mary J.***	1449 Milner Crescent	Birmingham
Parks, Mary Blande*	Druid City Hospital	Tuscaloosa
Philen, Delle Iva	1029 — 18th St., South	Birmingham
Rice, Verna M.	R. F. D. No. 1, Box 116	Mobile
Stone, Clara	429 N. Walnut St.	Florence
Traber, Anna	LaSalle Apartments	Birmingham
Wilbanks, Mark Carolyn**	West End Baptist Hospital	Birmingham

ARIZONA

Christian, Marion	Cochise County Hospital	Douglas
Dearing, Lennie B.***	Box 88	Flagstaff
Maire, Frances H.	907-8 Nat'l Valley Bk. Bldg.	Tucson
Thomas, Alice M.	305 Goodrich Bldg.	Phoenix

ARKANSAS

Brown, Martha	Davis Hospital	Pine Bluff
Howard, Claudia E.	1427 Poplar St.	North Little Rock
Petty, Blanche G.	726 Donaghey Bldg.	Little Rock
Raper, Edith W.	Trinity Hospital	Little Rock
Sister M. Martha	St. Bernard Hospital	Jonesboro
Summers, Mrs. Mary D.	Julia Chester Hospital	Hope
Tate, Mrs. Thelma R.	St. Louis Southwestern Ry. Hosp.	Texarkana
Thomson, Jessie M.	City Hospital	Little Rock

CALIFORNIA

Andersen, Emmeline	Mercy Hospital	Sacramento
Anderson, Vera M.	390 Central Ave.	Oakland
Armitage, Irene R.	Paradise Valley Sanitarium	National City
Barbee, Genevieve	1318 Pine St.	Martinez
Barker, Betty	1167 Bush St.	San Francisco
Bartron, Kathryn	1167 Bush St.	San Francisco
Bates, Alta A.	Alta Bates Hospital	Berkeley
Berry, Comfort A.	257 Wayne Ave.	Oakland
Bichel, Martha*	Franklin Hospital	San Francisco
Bishop, Mrs. Anna K.	75 Dolores St.	San Francisco
Black Minnie M.	Letterman Gen'l Hospital	San Francisco
Bolton, Gladys M.	Samuel Merritt Hospital	Oakland
Bulin, Emma J.	Jackson Lake Hospital	Oakland

* President State Association
** Secretary State Association
*** Associate member

Cauthorn, Mabel	Community Hospital	San Mateo
Casey, Veronica	San Francisco Hospital	San Francisco
Catalano, Mrs. Priscilla Hall	St. Francis Hospital	San Francisco
Clark, Mrs. Bertha M.	837 — 450 Sutter	San Francisco
Clutton, Evangeline M.	Peralta Hospital	Oakland
Culver, Edith	Sutter Maternity Hospital	Sacramento
Curtis, Adeline	Johnston Clinic	Anaheim
Davis, Grace M.	3423 Webster St.	Oakland
Dean, Mrs. Mildred C.	241 — 29th St., Apt. 7	Oakland
Deering, Bessie G.	Sutter Hospital	Sacramento
Donley, Helene	1255 Hamilton Ave.	Palo Alto
Doran, Irene	21 Park Hill Ave.	San Francisco
Duncan, Cleo	308 Curry St.	Carson City, Nev. (temp.)
Ellis, Mrs. Vyevene	1005 Hyde St.	San Francisco
Duffey-Fox, Mrs.Laura DeE.	Box 73, Sanitarium	Napa County, Cal.
Goulet, Minnie	Mercy Hospital	Sacramento
Graham, Mrs. Katherine H.	San Francisco Hospital	San Francisco
Grimes, Flora A.	Sutter Hospital	Sacramento
Grunewald, Louise I.	2648 E. 14th St.	Oakland
Guptill, Martha M.	Samuel Merritt Hospital	Oakland
Hall, Annie J.	Mercy Hospital	Sacramento
Hanson, Mell J.	396 Hawthorne	Oakland
Hebert, Marie Lya	Dameron Hospital	Stockton
Hixson, Ulma	Suite 502, Flood Bldg.	San Francisco
Hoover, Mrs. Zola P.	Box 4119, Route 7	Sacramento
Huntimer, W. Serena	500 Stanyan St.	San Francisco
Inghram, Elsie		Millbrae
Jevne, Mrs. Sophie	6331 Hollywood Blvd.	Hollywood
Jillson, Mary A.	8353 Outlook Ave.	Oakland
Johnson, Mary	1904 Franklin St.	Oakland
Jones, Edith H.	St. Francis Hospital	San Francisco
Jons, Elizabeth S.	435 Sacramento St.	Altadena
Jurash, Helen J.	Nurses' Quarters	Marchfield
Keenan, Katherine	4100 Fulton St.	San Francisco
Kemp, Ada I.	Franklin Hospital	San Francisco
Kempers, Norma C.	330 E. River St.	Orange
Krekeler, Mrs. Irene F.***	1220 Linden St.	Oakland
Krogstad, Lorna E.	Mercy Hospital	Sacramento
Kulchar, Helen E.	East Oakland Hospital	Oakland
Lagan, Mrs. Marian Yost**	5 Prado St.	San Francisco
Lewis, Myrna	Cottage Hospital	Santa Barbara
Lutz, Elizabeth A.	726 — 4th St.	Marysville
McCoppin, Margaret	418 Coloma Way	Sacramento
Malamphy, May	2085 Hayes St.	San Francisco
Moore, Greta	Lawrence St.	Amherst, Nova Scotia (temp.)
Morgan, Mrs. Gay	807 — 39th Ave.	San Francisco
New, Margaret Opal	San Joaquin Gen'l Hospital	French Camp
Pence, Mada	716 — 3rd St.	Woodland
Peters, Lillian L.	1202 Hampshire St.	San Francisco
Piercy, Mrs. F. Margaretta	1229 York St.	San Francisco
Pray, Jean H.	420 Hawthorn Ave.	Oakland
Pringle, Mrs. Gertrude N.	65 Buena Vista Ave.	San Francisco
Quarles, Myra B.	Children's Hosp. of the East Bay	Oakland
Quinn, Mrs. Virginia	Denny	Trinity County
Rogers, Margaret Couch	Enloe Hospital	Chico

* President State Association
** Secretary State Association
*** Associate member

Rudel, Viola	St. Francis Hospital	San Francisco
Sist. M. Remigia Wiederkehr	St. Joseph's Hospital	San Francisco
Schreiber, Olga E.	Woodland Clinic	Woodland
Schultz, Adella I.	518 — 44th St.	Oakland
Seroy, Jeanette M.	San Joaquin General Hospital	Stockton
Singleton, Adele	182 Pine St.	San Anselmo
Smith, Louise A.	3226 Glenhurst Ave.	Los Angeles
Smith, Vieve L.	U. S. Marine Hospital	San Francisco
Snail, Mrs. Alice Edith	Tuolumne County Hospital	Sonora
Snodgrass, Mrs. Nan	Saint Francis Hospital	San Francisco
Spencer, Esther J.	450 Sutter St.	San Francisco
Sponheim, Mina G.	Samuel Merritt Hospital	Oakland
Sproles, Opal R.	St. Mary's Hospital	San Francisco
Stevenson, Mrs. Mary J. R.	Franklin Hospital	San Francisco
Stone, Elva	390 Central Ave.	Oakland
Stuart, Linda M.	Sutter Hospital	Sacramento
Torres, Mrs. Beatrice M.***	646 Junipero Ave.	Pacific Grove
Tynan, Gertrude L.	R. R. No. 1, Box 292	Manteca, San Joaquin Co.
Vortman, Helen A.	2820 O St.	Sacramento
Walsh, Blanche L.	390 Central Ave.	Oakland
Watkins, Kathryn	Samuel Merritt Hospital	Oakland
Wilkinson, Irma	332 Pierce St.	San Francisco
Willey, Alice V.	General Hospital	Santa Barbara
Wilson, Eva M.	5804 Fleming Ave.	Oakland
Winkjer, Olga	1618 Oregon St.	Bakersfield
Winter, Cecelia M.	Cottage Hospital	Santa Barbara

COLORADO

Bowden, Louise E.**	761 Bellaire St.	Denver
Carpenter, Mrs. May M.*	2370 Ash St.	Denver
Cook, Josephine	Larimer Co. Hospital	Ft. Collins
Currie, Ethel F.	Presbyterian Hospital	Denver
Hansbrough, Elizabeth	Fitzsimons Hospital	Denver
Kauffman, Loma	918 Raton Ave.	La Junta
Kramer, Margaret L.	Corwin Hospital	Pueblo
Leonard, Maxine M.	Mercy Hospital	Denver
Moon, Henrietta M.	Presbyterian Hospital	Denver
Sister M. Luitgard	Thomas More Hospital	Canon City
Sister M. Sylvester Duffy	Mt. San Rafael Hospital	Trinidad
Scheirer, Eleanor C.	3419 So. Pennsylvania St.	Denver
Stevens, Mrs. Ann McDonald	1620 Detroit St.	Denver

CONNECTICUT

Allcock, Alice	Charlotte Hungerford Hospital	Torrington
Allison, Mary Vine	Meriden Hospital	Meriden
Bander, Edna M.	120 Dwight St.	New Haven
Blaney, May V.***	St. Francis Hospital	Hartford
Boyer, Alpha J.	810 Howard Ave.	New Haven
Bulger, Mrs. Anne S.	Day Kimball Hospital	Putnam
Clarke, Lula Agnes	Litchfield County Hospital	Winsted
Davis, Mrs. Sarah J.	Litchfield County Hospital	Winsted
Dunst, Elizabeth	St. Vincent Hospital	Bridgeport
Earley, Ruth A.	780 Howard Ave.	New Haven
Foley, Virginia M.	Greenwich Hospital	Greenwich
Gardner, Martha E.	Bridgeport Hospital	Bridgeport
Golding, Mildred I.	Lawrence & Mem'l Asso. Hosp's	New London
Gordon, Mary K.	Mt. Sinai Hospital	Hartford

* President State Association
** Secretary State Association
*** Associate member

Kloss, Mrs.Alice Norwood***	Newfield Road	Torrington
Kucewicz, Mrs. Mary N.	33 Burns Ave.	Thompsonville
Nast-Hoff, Mrs. Karoline W.	Day Kimball Hospital	Putnam
Hunt, Alice M.	New Haven Hospital	New Haven
Hutchinson, Doris I.	Manchester Mem'l Hospital	Manchester
McCarthy, Dorothy C.	Bridgeport Hospital	Bridgeport
MacPherson, Margaret	2898 Main St.	Bridgeport
O'Donnell, Ann Rita***	St. Francis Hospital	Hartford
Powers, Annie E.***	370 Collins St.	Hartford
Rice, Lillian A.	Box 6C, c/o D. A. Rice	Oakdale
Smyser, A. Pauline	Bristol Hospital	Bristol
Stover, Ethel	Bridgeport Hospital	Bridgeport
Tamm, Helene	40 Seminary St.	New Canaan
Vezina, Clara A.	Bridgeport Hospital	Bridgeport
DELAWARE		
McCool, M. Vivian	Wilmington General Hospital	Wilmington
Powell, Jessie E.	Delaware Hospital	Wilmington
Sheppard, Dorothea	Wilmington General Hospital	Wilmington
Taglieber, Mabel	St. Frances Hospital	Wilmington
DISTRICT OF COLUMBIA		
Fox, Carrie Belle C.	2407 — 15th St., N.W.	Washington
Ogle, Cora Lee	1625 H St., S.E.	Washington
Quin, Beatrice Mabel	Walter Reed Hospital	Washington
Ryan, Ellen	4015 Benton St., N.W.	Washington
Schoch, Icie A.	3622 — 28th St., N.E.	Washington
Shaver, Mrs. Elvie Mae	4481 Conduit Road, N.W.	Washington
Short, Augusta Lee	Walter Reed General Hospital	Washington
Witter, Kathryn G.***	Walter Reed General Hospital	Washington
FLORIDA		
Ballentine, Ruth	Johnston's Sanitarium	Tallahassee
Beach, Emma B.	Box 68	Pompano
Bell, Fannie R.***	1104 E. DeSoto St.	Pensacola
Bradbury, Mrs. Lenella Mae	Orange General Hospital	Orlando
Brown, Mrs. Mary C.	1135 S. W. 12th St.	Miami
Card, Jennie A.	1450 S. W. 7th St.	Miami
Clasen, Caroline F.	Jackson Mem'l Hospital	Miami
Compton, Evon Echols	1227 Greenwood Ave.	Orlando
Creelman, Margaret E.	Tampa Municipal Hospital	Tampa
Davis, Nellie G.	1426 — 9th St. North	St. Petersburg
Easterling, Emma	Jackson Memorial Hospital	Miami
Edwards, Mrs. Ruth Hoyt***		Zellwood
Ellis, Mrs. Ida Tedford*	1210 Kuhl Avenue	Orlando
Grant, Iva S.**	108 E. Central Ave.	Orlando
Green, Mrs. Almida C.	Jackson Memorial Hospital	Miami
Jackson, Dorothy Lucille	Veterans' Administration Facility	Lake City
Kenney, Florence	St. Francis Hospital	Miami Beach
Kiefer, Anna Marie***	St. Luke's Hospital	Jacksonville
Kossack, Michalina A.	Dade County Hospital	Miami
Miller, Helen K.	Box 35	Weirsdale
Muren, Frances R.	937 — 10th St. North	St. Petersburg
Phillipoff, Mary Frances	Morton Plant Hospital	Clearwater
Thompson, Ellie	Box 899	Lakeland
Vance, Ina B.	Alachua County Hospital	Gainesville
Watts, Marjorie Lee	c/o Dr. T. C. Maguire	Plant City

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GEORGIA

Aultman, Mary Lou	Archbold Memorial Hospital	Thomasville
Belcher, Lexie		West Green
Bresnahan, Mary	Central of Ga. Railway Hosp.	Savannah
Burdette, Agnes	Middle Georgia Hospital	Macon
Burns, Mrs. Estelle W.	R. R. 2	Decatur
Carnes, Rhea	Archbold Memorial Hospital	Thomasville
Dasher, Annie Laurie	202 E. Liberty St.	Savannah
Davidson, Ruth E.	Grady Hospital	Atlanta
Davis, Mrs. Effie	Patterson Hospital	Cuthbert
Egan, Mrs. Pierina G.	Vereen Memorial Hospital	Moultrie
Grubb, Mary Ann	Douglas Hospital	Douglas
Hewes, Caroline	Macon Hospital	Macon
Honenschutz, Caroline**	Ponce de Leon Eye, Ear, Nose and Throat Infirmary	Atlanta
Hollum, Annie L.	City Hospital	Columbus
Jones, E. Mae	Rawlings Sanitarium	Sandersville
King, Mrs. Mary McCord	Atlanta So. Dental College	Atlanta
Knight, Ethel	Route 3	Macon
Lewis, Mary Frances	Grady Hospital	Atlanta
McDonald, Mrs. Rosalie C.*	Emory University Hospital	Emory University
Miller, Brownlee	640 Forrest Road	Atlanta
Rapp, Mrs. Grace John	574 Collier Road	Atlanta
Ridley, Mrs. Ruby	Steiner Clinic	Atlanta
Rogers, Myrtle	Georgia Baptist Hospital	Atlanta
Ross, Grace	St. Joseph's Infirmary	Atlanta
Rowzee, Theo. Lanier	1120 Doctors' Bldg.	Atlanta
Sister M. Leandra	St. Mary's Hospital	Athens
Schier, Alpha E.	St. Joseph's Hospital	Atlanta
Stott, Mabel G.	Station Hospital	Ft. McPherson
Vickers, Leola	Grady Hospital	Atlanta
Warman, Halo	Emory University Hospital	Emory University
Watkins, Mrs. Bessie Wood	Route 1, Box 153A	Smyrna
Williams, Lucile	Central of Ga. R. R. Hospital	Savannah

IDAHO

Butler, Selma J.	Box 129	Cottonwood
Davis, Mary E.	Pocatello General Hospital	Pocatello
Henggeler, Martha M.	917½ Fort St.	Boise
Johnson, Elsie P.	211 Walnut St.	Twin Falls
Meyer, Marie	415 Jefferson St.	Boise
Sister Mary Helen	Our Lady of Consolation Hosp.	Cottonwood
Sister Joseph Arthur	Providence Hospital	Wallace

ILLINOIS

Abell, Ora E.	Schmitt Memorial Hospital	Beordstown
Allen, Lulu Clara	St. Francis Hospital	Evanston
Arns, Irene	2400 S. Dearborn St.	Chicago
Badeaux, Josephine	St. Joseph Hospital	Alton
Bahl, Marie H.	2537 Prairie Ave.	Chicago
Baines, Julia Tomlinson	1422 Sedgwick St.	Chicago
Baker, S. Gayle	2816 Ellis Ave.	Chicago
Barlow, Esther Ann	4655 Lake Park Ave.	Chicago
Baumgartner, Lottie M.	518 North Austin Blvd.	Chicago
Beahan, Elizabeth A.	West Suburban Hospital	Oak Park
Bennett, Mrs. Dorothy	Belmont Hospital	Chicago

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Bernardy, Mary Jayne	Little Company of Mary Hospital	Evergreen Park
Botsford, Daisy G.	1324 No. Sheridan Road	Waukegan
Brechtel, Ida	Deaconess Hospital	Freeport
Breitenfeld, Mrs. Mary F.	4837 Addison St.	Chicago
Brooks, Mary	Berwyn Hospital	Berwyn
Burke, Ursula M.	Evanston Hospital	Evanston
Burnett, Anna P.	33 Fairview Avenue	Park Ridge
Cameron, Mrs. Mae B.	Ravenswood Hospital	Chicago
Clardy, Grace I.	3821 West Washington Blvd.	Chicago
Colvin, Thelma V.	Hinsdale Sanitarium and Hosp.	Hinsdale
Coupland, Margaret	Methodist Hospital	Peoria
Crane, Mrs. Katherine	1912 W. Spruce St.	Springfield
Crowley, Mechtildes Collette	St. Francis Hospital	Peoria
Czyzycki, Catherine C.	Woodlawn Hospital	Chicago
Daniels, Clorecia	653 Belmont Ave.	Chicago
Derks, Elizabeth	Morris Hospital	Morris
Diediker, Matilda	3249 Potomac	Chicago
Diveley, Mary V.	2030 N. Lowber St.	Decatur
Dorum, Thelma	St. Joseph Hospital	Chicago
Duray, Mary	2750 W. 15th Place	Chicago
Egleston, Ada Marxhausen	American Hospital	Chicago
Estry, Mable Myers	Michael Reese Hospital	Chicago
Falconer, Geneva B.	Maternity Hospital, St. John's Nurses' Home	Springfield
Ford, Lauda Stein	Augustana Hospital	Chicago
Fossum, Alma	1246 N. Dearborn	Chicago
Ganzbuhl, Margaret	St. Anthony's Hospital	Chicago
Girkin, Nettie R.	Michael Reese Hospital	Chicago
Gregory, Caroline C.	1214 — 14th St.	Waukegan
Gruska, Hermina E.	Jackson Park Hospital	Chicago
Halm, Vincentia G.	550 North Pine Avenue	Chicago
Hansen, Elizabeth T.	939 N. LaSalle St.	Chicago
Hansing, Bertha	699 Deerpath	Lake Forest
Hard, Mabel D.	Jackson Park Hospital	Chicago
Hellickson, Helga Christine	Ravenswood Hospital	Chicago
Hellman, Marjorie	4544 N. Claremont Ave.	Chicago
Hickey, Mary C.	South Shore Hospital	Chicago
Hoagland, Jennie	Cook County Hospital	Chicago
Hoffman, Gladys Mary**	Englewood Hospital	Chicago
Holmes, Edith Helen	1044 N. Francisco	Chicago
Holt, Nina Mae	St. Mary's Hospital	Kankakee
Horrer, Alice L.	1248 N. 4th St.	Springfield
Hunt, Valeda V.	Mt. Sinai Hospital	Chicago
Kasten, Mary C.	St. Anne's Hospital	Chicago
Kedas, Anne Ellen	Michael Reese Hospital	Chicago
Kelley, Winifred	St. Luke's Hospital	Chicago
Kraus, Paula	740 Hayes Ave.	Oak Park
Krawczyk, Anna A.	Woodlawn Hospital	Chicago
Kuhn, Pauline	John B. Murphy Hospital	Chicago
Lane, Maud	Englewood Hospital	Chicago
Lebkuecher, Ethel M.	Decatur & Macon Co. Hospital	Decatur
Lee, Agnes J.	1044 North Francisco Avenue	Chicago
Leidel, Leeta	Wabash Hospital	Decatur
Lemmons, Geneva	850 Irving Park Blvd.	Chicago
Lenihan, Julia	645 S. Central Ave.	Chicago
Lewis, Hattie M.	St. John's Hospital	Springfield

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Lindsey, Mrs. Grace V.***	221 N. Glen Oak	Peoria
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McCall, Catherine	Silver Cross Hospital	Joliet
McCreary, Opal E.	Little Company of Mary Hospital	Evergreen Park
McDermott, Esther L.	Evanston Hospital	Evanston
McGinley, Edith	St. Luke's Hospital	Chicago
McGraw, Mary R.	Oak Park Hospital	Oak Park
Mah, Margaret Toy	3557 N. Southport Ave.	Chicago
Mahoney, Alice I.	5735 S. Wood St.	Chicago
Mahoney, Clara C.	2816 Ellis Ave.	Chicago
Maisnik, Shirley	St. Luke's Hospital	Chicago
Marchioni, Linda Marie	645 S. Central Ave.	Chicago
Martin, Alice	915 Wilson Ave.	Chicago
Mausz, Angelene	3813 Washington Blvd.	Chicago
Meinhardt, Frances	836 Wellington Ave.	Chicago
Metzke, Angeline	Silver Cross Hospital	Joliet
Miller, Mrs. Ada	St. Joseph's Mercy Hospital	Aurora
Miller, Hazel	Martha Washington Hospital	Chicago
Modaff, Louise	Chicago Memorial Hospital	Chicago
Mullowney, Margaret	527 Maple St., South	Oak Park
Murray, Edna M.	J. C. Hammond City Hospital	Geneseo
Myers, Leone M.	Ravenswood Hospital	Chicago
Myres, Wanda M.	Southtown Hospital	Chicago
Myrseth, Gudrun	Ingalls Memorial Hospital	Harvey
Nelson, Anna N.	536 Webster Ave.	Chicago
Newman, Blanche	5800 Stony Island Avenue	Chicago
Newton, Mary Margaret	Methodist Hospital	Peoria
Nichol, Mabel A.*	530 W. Arlington Place	Chicago
Nordwall, Frida	Swedish Covenant Hospital	Chicago
Nugent, Agnes L.	1415 Gregory St.	Chicago
O'Day, Exire	Ravenswood Hospital	Chicago
O'Leary, Helen E.	Passavant Hospital	Chicago
Olson, Anna M.	551 Grant Place	Chicago
O'Neil, May Agnes	St. Anne's Hospital	Chicago
Petersen, Margaret	413 E. First St.	Dixon
Pettigrew, Mrs. Sara N.	105 West Third St.	Sterling
Pippereit, Martha A.	Chicago Memorial Hospital	Chicago
Priester, Ann	West Suburban Hospital	Oak Park
Proudfit, Mrs. Harriet O.	Woodstock Hospital	Woodstock
Reed, Martha	Springfield Hospital	Springfield
Reynolds, Vera	Pekin Public Hospital	Pekin
Riegel, Mrs. Bertha	419 Sherman St.	Joliet
Riegel, Esther	1116 N. Kedzie Ave.	Chicago
Riley, Alice Madge	Augustana Hospital	Chicago
Rinella, Edris P.	Illinois Central Hospital	Chicago
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Roth, Jean	Mercy Hospital	Chicago
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Sister M. Ambrose	2700 W. 69th St.	Chicago
Sister Andrea Weisgerber	St. Anthony's Hospital	Effingham
Sister Angilberta	St. Theresa Hospital	Waukegan
Sister Annunciata Maas	St. Clara's Hospital	Lincoln
Sister M. Antonella Rauch	St. Joseph's Hospital	Joliet
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Sister Jean Sudkam	St. Elizabeth's Hospital	Belleville
Sister Johanelle Woityna	St. John's Hospital	Springfield
Sister Johanita Toennies	St. Vincent's Hospital	Taylorville
Sister M. Josephine	St. Mary's Hospital	Kankakee
Sister Jovita Schumann	St. Joseph's Hospital	Joliet
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Sister Licine	St. John's Hospital	Springfield
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Sister M. Lillian	John B. Murphy Hospital	Chicago
Sister M. Loyola Panter	St. Francis Hospital	Freeport
Sister M. Louise Odenthal	St. Joseph's Hospital	Joliet
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Mother Magdalene***	St. Francis Convent	Riverton
Sister Marianna Cassellius	St. Charles Hospital	Aurora
Sister Materna Boronowski	St. Francis Hospital	Litchfield
Sister M. Mildred Sauer	St. Joseph's Hospital	Elgin
Sister Odilard	Lewis Memorial Maternity Hosp.	Chicago
Sister M. Oswalda	St. Joseph's Hospital	Elgin
Sister Pudencia Gaffron	St. John Hospital	Springfield
Sister M. Raymonda Hoefler	St. Anthony Hospital	Rockford
Sister Regula	St. John's Hospital	Springfield
Sister Reinbertha	St. John's Hospital	Springfield
Sister Rudolpha	St. John's Hospital	Springfield
Sister St. Alban	Huber Memorial Hospital	Pana
Sister St. Henry***	Oak Park Hospital	Oak Park
Sister Sophie Gebhard	St. John's Hospital	Springfield
Sister M. Theresa Ettelbrick	St. Anthony de Padua Hosp.	Chicago
Sister M. Virginia Clare	St. Joseph Hospital	Elgin
Schobert, Helen	7245 S. Oak Park Ave.	Berwyn
Sed, Julia	St. Anthony's Hospital	Chicago
Selby, Georgiana	1326 East 53rd St.	Chicago
Shaw, Jean	Oak Park Hospital	Oak Park
Sidel, Ollie	355 Ridge Ave.	Evanston
Slater, Helena	St. Luke's Hospital	Chicago
Speers, Helen M.	536 Webster	Chicago
Steinman, Mrs. Joy O'C.	Victory Memorial Hospital	Waukegan
Stenstrom, Naomi S.	South Shore Hospital	Chicago
Stephens, Mrs. Edna M.	351 St. Charles St.	Elgin
Stoltz, Frieda L.	1517 So. Michigan Ave.	Chicago

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Suttle, Ethel M.	635 So. Johnson	Macomb
Talcott, Mrs. Marie	Lincoln Hospital	Rochelle
Taylor, Hazel	Henrotin Hospital	Chicago
Terry, Anna M.	West Suburban Hospital	Oak Park
Teubel, Pauline E.	West Suburban Hospital	Oak Park
Tyler, Dorothy	St. Luke's Hospital	Chicago
Vincent, Nelle G.	Evanston Hospital	Evanston
Webster, Bonnie	Decatur & Macon Co. Hospital	Decatur
Welinske, Matilda Ann	Grant Hospital	Chicago
Whitford, Mrs. Mae L.	Collins Clinic	Peoria
Whitney, Madge***	2561 Cullom Ave.	Chicago
Willenborg, Anna	18 East Division Street	Chicago
Willenborg, Myrna	St. Luke's Hospital	Chicago
Wilson, Ruth	536 Webster Ave.	Chicago
Zech, Elizabeth D.	Evanston Hospital	Evanston
Zenz, Bernadine Marie	2537 Prairie Ave.	Chicago
Zwick, Mary Alma	Evanston Hospital	Evanston

INDIANA

Axel, Wilma Jo	St. Mary's Mercy Hospital	Gary
Church, Mrs. Margaret P.	1016 Garden St.	Fort Wayne
Deane, Thelma A.*	130 W. Miami Ave.	Logansport
Efinger, Irene H.	319 W. Louisiana St.	Evansville
Fox, Mrs. Nelle***	127 N. Buckeye St.	Kokomo
Guckian, Helen Kathleen	St. Mary Hospital	Evansville
Hane, Mrs. Ruth Hagen	Engle Road, Route 6	Fort Wayne
Kelly, Margaret W.	79 N. Cass St.	Wabash
Kirschner, Regina R.	Marion General Hospital	Marion
Lange, Agnes M.**	326 Arcadia Court	Fort Wayne
Like, Fern	411 Barnett	Vincennes
Reitz, Helen M.	319 W. Louisiana St.	Evansville
Von der au, Anna	2902 Fairfield Ave.	Fort Wayne
Warnock, Inez	Moore Clinic	Muncie

IOWA

Barrett, Ella	Mercy Hospital	Mason City
Brandt, Alma M.	Deaconess Hospital	Marshalltown
Ewer, Bertha A. L.	401 Security Bldg.	Sioux City
Hanner, Bonnie Bell	712 Parnell St.	Des Moines
Meyer, Marian Lucille	St. Joseph Mercy Hospital	Mason City
Morgan, Velma Mae	1200 Main St.	Dubuque
Parrish, Mae Aileen	St. Joseph Mercy Hospital	Dubuque
Pfauser, Chrystine H.	Jennie Edmundson Mem'l Hosp.	Council Bluffs
Puth, Mary Grace	St. Joseph's Mercy Hospital	Fort Dodge
Robinson, Lulu V.	1401 N. Court	Ottumwa
Robson, Marie K.***	308 Toy Nat'l Bank Bldg.	Sioux City
Ruggles, Esther	Burlington Hospital	Burlington
Sister M. Aloysius McGuire	St. Joseph Mercy Hospital	Centerville
Sister M. Gonzaga McGuire	Mercy Hospital	Des Moines
Sister Margaret Mary Kane	St. Joseph's Mercy Hospital	Sioux City
Sister M. Natalie Senecal	St. Joseph's Mercy Hospital	Centerville
Sister M. Pauline Hammes	Mercy Hospital	Des Moines
Sister M. Thomas Wilson	Mercy Hospital	Council Bluffs
Sister M. Yvonne Jenn	St. Anthony Hospital	Carroll, Iowa
Schwarting, Louise	Lutheran Hospital	Fort Dodge

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Smith, Ethel	517 High Ave. E.	Oskaloosa
Sven, Myrtle E.	Lutheran Hospital	Fort Dodge
Thompson, Helen M.	212 Ankeny Bldg.	Clinton
KANSAS		
Baker, Viola H.	Wesley Hospital	Wichita
McCarthy, Mrs. K. Kelly		Lyndon
Mikkola, Senia I.	Wesley Hospital	Wichita
Paul, Mrs. Ethel S.	Wesley Hospital	Wichita
Peterson, Mrs. Lavida***		Miller
Risser, Ella	Bethel Deaconess Hospital	Newton
West, Wanda G.	111 W. 10th St.	Concordia
Wilson, Mrs. Blanch	Kingman Memorial Hospital	Kingman
KENTUCKY		
Bloom, Estelle	822 Heyburn Bldg.	Louisville
Diebold, Ruth	St. Joseph Hospital	Lexington
Duncan, Mrs. Davida G.***		Columbia
Hammond, Constance	Box 41	Glasgow
Haverkamp, Etta***	217 Van Voast Ave.	Bellevue
Kissling, Bertha A.		Pikeville
Salt, Susan R.***	641 Park Ave.	Newport
Smith, Tommie	1110 Francis Bldg.	Louisville
LOUISIANA		
East, Lettie Virginia	Charity Hospital	New Orleans
Forsman, Rosalie M.	St. Francis Sanitarium	Monroe
Gebs, Lillian Mary	3511 Iberville St.	New Orleans
Grillet, Agnes	628 Fern St.	New Orleans
Grillet, Stella	628 Fern St.	New Orleans
Hauswald, Antoinette A.	Hotel Dieu	New Orleans
Hurff, Evelyn	Charity Hospital	New Orleans
Koenig, Mary E.	Charity Hospital	New Orleans
Myers, Esther	Charity Hospital	New Orleans
Pellessier, Lena	3336 Tulane Ave.	New Orleans
Peterman, Philomena Mary	3836 Canal St.	New Orleans
Richards, Alice	7933 Birch St.	New Orleans
Rolufs, Katie A.	Bienville Hotel Nurses' Home	New Orleans
Sister M. Aubierge Younge	St. Francis Sanitarium	Monroe
Seeberg, Molly L.	U. S. Marine Hospital	New Orleans
Simoneaux, Lise	Ellender Memorial Hospital	Houma
Wever, Mertice McLendon	1539 — 4th St.	New Orleans
MAINE		
Chaney, Mrs. Ardell M.	Children's Hospital	Portland
Denton, Helen G.		Caribou
Decker, Ann MacKay	Maine General Hospital	Portland
Greene, Gretchen V.	Eastern Maine General Hospital	Bangor
Jacobsen, Mrs. Lyman M.	Mt. Desert Island Hospital	Bar Harbor
Roy, Lillian B.	Maine General Hospital	Portland
Whitney, Velma J.	Franklin County Mem'l Hospital	Farmington
MARYLAND		
Argus, Clara	831 N. Washington St.	Baltimore
Berger, Olive L.	Johns Hopkins Hospital	Baltimore
Black, Mrs. Constance***	South Baltimore Gen'l Hospital	Baltimore
Carl, Dorothy M.***	4309 Chatham Road	Baltimore
DeLone, Florence A.	Emergency Hospital	Annapolis

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Dolan, Helen M.	613 N. Washington St.	Baltimore
Elliott, Ruth S.		
George, Mrs. Mildred Blum	125 South Liberty	Cumberland
Green, Annie Laurie	Emergency Hospital	Easton
Hoyt, Margaret L.	Washington Sanitarium & Hosp.	Takoma Park
Kavanagh, Mary Teresa	St. Joseph's Hospital	Baltimore
Mauk, Martha E.	229 Union St.	Cumberland
O'Brien, Mary Jane	University of Maryland Hospital	Baltimore
Owings, Frances V. N.	Johns Hopkins Hospital	Baltimore
Prince, Laura Ethel	Mercy Hospital	Baltimore
Richardson, Virginia L.	831 N. Washington St.	Baltimore
Richtman, Olive	Johns Hopkins Hospital	Baltimore
Smith, Grace L.	515 N. Wolfe St.	Baltimore
Snyder, Anna M.	Allegany Hospital	Cumberland
South, Genevieve A.	Sinai Hospital	Baltimore
Tyler, Amelia L.	Peninsula General Hospital	Salisbury
Weick, Anna M.	U. S. Marine Hospital	Baltimore
White, M. Adelaide	Johns Hopkins Hospital	Baltimore
Yarnall, Catherine E.***	U. S. Naval Hospital	Annapolis
Zerhusen, Ann Louise	12 West Read St.	Baltimore

MASSACHUSETTS

Albright, Alta M.	St. Luke's Hospital	New Bedford
Anderson, Clara E.	Waltham Hospital	Waltham
Bliss, Jessie M.	Quincy City Hospital	Quincy
Bond, Mrs. Helen L.***	Massachusetts State Infirmary	Tewksbury
Bralley, Belva B.	St. Luke Hospital	New Bedford
Carruthers, Aletha H.***	352 Eagle St.	North Adams
Chase, Mrs. Evelyn	20 Trenton St.	Melrose
Clough, Dorothy	House of Mercy Hospital	Pittsfield
Gerrard, Gertrude M.	Peter Bent Brigham Hospital	Boston
Haigwood, Hattie Blake	U. S. Marine Hospital	Chelsea
Hodgins, Agatha C.—Honorary President National Association		Chatham
Hume, Margaret E.	Box 735	Cohasset
Hunt, Christine Mary	House of Mercy Hospital	Pittsfield
Kirby, Mrs. Matilda F.***	Russell's Mills Road	North Dartmouth
Lank, Betty E.	Children's Hospital	Boston
Lewis, Dilys Amelia	Harrington Memorial Hospital	Southbridge
Macfadden, Shamah N.	Leominster Hospital	Leominster
MacRae, Elizabeth F.	Peter Bent Brigham Hospital	Boston
Sister M. Agnes	St. Vincent Hospital	Worcester
Sister M. Angelica	St. Vincent Hospital	Worcester
Sister M. Angeline	Mercy Hospital	Springfield
Sister Mary Ann	St. Luke's Hospital	Pittsfield
Sister M. Anthony	St. Vincent's Hospital	Worcester
Sister M. Armand	St. Vincent's Hospital	Worcester
Sister M. Assisi	St. Vincent's Hospital	Worcester
Sister M. Benedicta	St. Vincent's Hospital	Worcester
Sister Bernardina	St. Vincent's Hospital	Worcester
Sister M. Camilla	St. Luke's Hospital	Pittsfield
Sister M. of Divine Infant	Mercy Hospital	Springfield
Sister Mary Ellen	Mercy Hospital	Springfield
Sister M. Felicitas	Farren Memorial Hospital	Montague City
Sister M. George	St. Vincent's Hospital	Worcester
Sister M. Ignatius	St. Vincent's Hospital	Worcester
Sister M. Incarnatus	Providence Mother House	Holyoke
Sister M. Laurentine	St. Luke's Hospital	Pittsfield

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Sister M. Leocadia	Mercy Hospital	Springfield
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Sister M. Norbert	St. Vincent's Hospital	Worcester
Sister M. Philip Beiizi	Providence Hospital	Holyoke
Sister M. Seraphia	St. Luke's Hospital	Pittsfield
Sister M. of Seven Dolors	Providence Mother House	Holyoke
Sister M. Theresa of Holy Child	St. Luke's Hospital	Pittsfield
Sister Mary of Victory	Mercy Hospital	Springfield
Stevens, Louise A.	219 Clark Road	Brookline
Sutliff, Dorothy Stanton	Lowell General Hospital	Lowell
Sword, Esther	Shriners' Hospital for Chippled Children	Springfield
White, Isabella Wilson***	64 Hayes Avenue	Lowell

MICHIGAN

Allison, Clara E.	Community Hospital	Battle Creek
Aubrey, Anna E.	Receiving Hospital	Detroit
Baird, Lillian G.	University Hospital	Ann Arbor
Barron, Loretta	Leila Y. Post Hospital	Battle Creek
Becker, Dora	Butterworth Hospital	Grand Rapids
Beil, Doris E.	Woman's Hospital	Detroit
Bilyea, Clara	1190 Seward	Detroit
Blakley, Sarah I.	Children's Hospital	Detroit
Bradbury, Nelle	50 Ridge Road	Grosse Point
Coles, Margaret M.	St. Mary's Hospital	Detroit
Costello, Josephine Zita	Alexander Blain Hospital	Detroit
Coté, Angela Bernadette	1298 Fourth St.	Muskegon
Courtney, Mabel E.	Grace Hospital	Detroit
Crawford, Alethea M.	Blodgett Memorial Hospital	Grand Rapids
Crosby, Alice C.	W. A. Foote Memorial Hospital	Jackson
Currie, Laurel M.	Wyandotte Hospital	Wyandotte
Deeks, Dorothy	3740 John R St.	Detroit
Dickison, Emma B.	Chippewa Co. War Mem'l Hosp.	Sault Ste Marie
Dow, Verna E.	University of Michigan Hospital	Ann Arbor
Drobnek, Helen C.	Mercy Hospital	Benton Harbor
Dudewicz, Helen	St. Mary's Hospital	Saginaw
Eckhart, Carmen A.	Redford Receiving Hospital	Detroit
Emery, Alda M.	Providence Hospital	Detroit
Esper, Agnes	3740 John R St.	Detroit
Filter, Ruth M.	Hurley Hospital	Flint
Fleming, Bridget A.	St. Mary's Hospital	Saginaw
Fletcher, Mamie Jane	Receiving Hospital	Detroit
French, Mrs. Bessie May	Women's Hospital	Flint
Galbraith, A. Maude	212 Antisdel Place, N.E.	Grand Rapids
Golrick, Meta	Hurley Hospital	Flint
Goode, Margaret T.	Woman's Hospital	Detroit
Greene, Thelma	Grace Hospital	Detroit
Greenway, Emma	Receiving Hospital	Detroit
Gribble, Mrs. Lenore	7368 Poe Avenue	Detroit
Hain, Alice L.	Evangelical Deaconess Hospital	Detroit
Hartley, Ora Mae	Beyer Hospital	Ypsilanti
Hazzard, Mrs. Mary McM.	Gerber Memorial Hospital	Fremont
Hendricks, Esther M.	3740 John R St.	Detroit
Hill. Maude	81 Franklin St.	Houghton
Hopkins, Mrs. Ida M.	8321 Grand River	Detroit

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Howard, Florence G.	Woman's Hospital	Detroit
Huebner, Emma M.	St. Luke's Hospital	Marquette
Huffman, Annie	7125 W. Jefferson Ave.	Detroit
Ilgenfritz, Esther L.	St. Joseph's Mercy Hospital	Pontiac
Kempton, Christine B.	Florence Crittenton Hospital	Detroit
Kinloch, Dorothy C.	Receiving Hospital	Detroit
Koontz, Geneva C.	Hurley Hospital	Flint
Krewson, Josephine E.	Mercy Hospital	Muskegon
Leuzinger, Mrs. Dorothy	Highland Park General Hospital	Highland Park
Long, Florence H.	Saginaw General Hospital	Saginaw
McCool, Barbara	St. Mary Hospital	Detroit
McKnight, Mary Thomson	Saginaw General Hospital	Saginaw
Marion, Marion Marie	Children's Hospital	Detroit
Martin, Mrs. Mary Sturgeon	218 Ferris St.	Ypsilanti
Mason, Esther R.	403 Cherry St., S.E.	Grand Rapids
Masselink, Mrs. Lucy C.		McBain
Meil, Esther J.	Henry Ford Hospital	Detroit
Moir, Ethel M.	847 Lathrop	Detroit
Muse, Eddie	W. A. Foote Memorial Hosp.	Jackson
Myers, Gertrude McEveney	15495 Manor	Detroit
Olzem, Catherine H.	13043 Camden Ave.	Detroit
Peffers, Irene	7404 Dunedin Ave.	Detroit
Perry, Mae A.	Goodrich General Hospital	Goodrich
Phelps, Persis M.		Cedar Springs
Rusche, Vied Marie	16530 Patton	Detroit
Sister M. Alacoque	St. Joseph's Hospital	Menominee
Sister M. Alfreda Venner	St. Mary's Hospital	Grand Rapids
Sister Alphonse Liguori	St. Joseph's Sanitarium	Mt. Clemens
Sister M. Aquina Leenders	St. Francis Hospital	Escanaba
Sister Clara Behnke	Evangelical Deaconess Hospital	Detroit
Sister M. Constance Steffes	Borgess Hospital	Kalamazoo
Sister Helen Marie Hughes	St. Joseph's Mercy Hospital	Ann Arbor
Sister M. Henrietta	St. Mary Hospital	Marquette
Sister M. James Rice	St. Mary's Hospital	Grand Rapids
Sister M. John Geierman	St. Joseph's Mercy Hospital	Pontiac
Sister M. Lorraine Tobin	St. Mary's Hospital	Grand Rapids
Sister M. Stella Kearney	St. Mary's Hospital	Grand Rapids
Sister M. Theodora Kelling	Mercy Hospital	Grayling
Sahl, Margaret	Butterworth Hospital	Grand Rapids
Schoonbeck, Mrs. Bertha S.	Box 165	Plainwell
Sheehan, Elizabeth	1050 Hibbard Ave.	Detroit
Shuff, Frances	Eloise Hospital	Eloise
Singer, Barbara	8328 Townsend Ave.	Detroit
Smith, Mary Beatrice	Receiving Hospital	Detroit
Snider, Ada	4011 Carter Ave.	Detroit
Snyder, Hazel Pauline	Eloise Hospital	Eloise
Stefaniak, Anne B.	Eloise Hospital	Eloise
Stephens, Alice L.	Wyandotte General Hospital	Wyandotte
Sturgeon, Kathleen	University of Michigan Hosp.	Ann Arbor
Swartzendruber, Agnes	Mercy Hospital	Benton Harbor
Teal, Bernice R.	University of Michigan Hosp.	Ann Arbor
Thomas, Nathalia M.	Harper Hospital	Detroit
Tucker, Helen	432 E. Hancock St.	Detroit
Walsh, Jean A.	Providence Hospital	Detroit
Weigand, Marion	406 W. 11th St.	Traverse City
Wessinger, Ione	Ford Hospital	Ann Arbor

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Wilkinson, Vera S.	2270 Sophia St.	Wayne
Wonderly, Valeria F.	1203 Union Industrial Bldg.	Flint
Zolman, Mrs. Alice V.	R. 2	Pontiac

MINNESOTA

Anderson, Alice L.*	Minneapolis General Hospital	Minneapolis
Anderson, Palma A.	Lutheran Deaconess Hospital	Minneapolis
Baer, Maple A.	St. John's Hospital	St. Paul
Becker, Frieda	Ashton Memorial Hospital	Pipestone
Cleary, Kathleen M.***	St. Luke's Hospital	St. Paul
Crotty, Rosella	Virginia Municipal Hospital	Virginia
Eyk, Helen E.	Montevideo Hospital	Montevideo
Ferguson, Geraldine V.	Army Nurse Corps	Fort Snelling
Filla, Julia	Charles T. Miller Hospital	St. Paul
Furjanick, Marie E.	225 So. 4th St.	Virginia
Gartner, Elizabeth L.	St. Mary's Hospital	Minneapolis
Ginther, Winifred	2725 — 17th Ave. South	Minneapolis
Goblirsch, Agnes C.	1027 N. German St	New Ulm
Grams, Charlotte L.	1003 Ivy St.	St. Paul
Grebstad, Borghild	Northwestern Hospital	Minneapolis
Gregoire, Antoinette B.	St. Andrew's Hospital	Minneapolis
Gronvold, J. Marie	St. Joseph's Hospital	St. Paul
Haug, Camilla	Swedish Hospital	Minneapolis
Hoseth, Petrine	St. Barnabas Hospital	Minneapolis
Hutcheon, Mary Ethel	Winona General Hospital	Winona
Johnson, Anna	Nopeming Sanitarium	Nopeming
Jurgensen, Katharine D.	Swedish Hospital	Minneapolis
Kalstrom, Clarice S.	Milan Hospital	Milan
Kippen, Janet	Asbury Hospital	Minneapolis
Koch, Dorothy L.**	Minneapolis General Hospital	Minneapolis
LeJeune, Ruby L.	Mounds Park Hospital	St. Paul
Lemke, Pearl F.	University of Minnesota Hospital	Minneapolis
Littel, L. Rose	Minneapolis General Hospital	Minneapolis
Lonergan, Ellen M.	Glen Lake Sanitarium	Oak Terrace
Longley, Ella Kent	114 — 11th Ave. S. W.	Rochester
Matthews, Mildred M.	Abbott Hospital	Minneapolis
Muhle, Tena	Minnesota Hospital	Minneapolis
Nelson, Orilla H.	St. Barnabas Hospital	Minneapolis
Nichols, Christine	Swedish Hospital	Minneapolis
Nordquist, Mrs. Anna S.	Abbott Hospital	Minneapolis
Perkins, Florence E.	Miller Hospital	Duluth
Petersen, Anna C.	2400 Portland Ave.	Minneapolis
Peterson, Edith L.		Odin
Peterson, Hazel J.	Fairview Hospital	Minneapolis
Petrowski, Mrs. Marie	Ancker Hospital	St. Paul
Rau, Magdalene M.***	St. John's Hospital	St. Paul
Risse, Mayme J.	St. Luke Hospital	Fergus Falls
Roadman, Bernice	Asbury Hospital	Minneapolis
Root, Mable G.	Midway Hospital	St. Paul
Rosengren, Myrtle E.	Shriner's Hospital	Minneapolis
Sister Caroline Pepmeier	St. Lucas Deaconess Hospital	Faribault
Sister M. Cornelia Lee	St. Francis Hospital	Breckenridge
Sister M. Leonissa	St. Mary Hospital	Minneapolis
Sister M. Loyola Nolan	St. Gabriel's Hospital	Little Falls
Sister M. Philomena	St. Ansgar's Hospital	Moorhead
Sister M. Xavier Reeves	St. Vincent's Hospital	Crookston
Sandberg, Elvy	St. Andrew Hospital	Minneapolis

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Slattendale, Julo A.	University Hospital	Minneapolis
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Swenson, Nora V.	Swedish Hospital	Minneapolis
Thorvaldson, Mrs. Leah W.	Northwestern Hospital	Minneapolis
Toomey, Martha M.	St. Mary's Hospital	Duluth
Van Dam, Esther	Abbott Hospital	Minneapolis
Vandervelde, Clara P.	St. Barnabas Hospital	Minneapolis
Vig, Gusta	Fairview Hospital	Minneapolis
Walters, Ruth	Minneapolis General Hospital	Minneapolis
Westly, Grethe S.	Deaconess Hospital	Minneapolis

MISSISSIPPI

Adams, Dovie	Methodist Hospital	Hattiesburg
Anderson, Lida E.		Moss Point
Angland, Margaret M.	Ramsay Clinic	Laurel
Bramlett, Mrs. Jamie	Bramlett Hospital	Oxford
Collins, Susie May**	c/o Drs. Trudeau & O'Mara	Biloxi
Cooke, Helen B.	McComb City Hospital	McComb
Davies, Willie Lee	Vicksburg Infirmary	Vicksburg
Ellsey, Hettye	11th St. and 21st Ave.	Meridian
Francis, Louise	Clarksdale Hospital	Clarksdale
Glass, Mrs. Ruth P.	Methodist Hospital	Hattiesburg
Hallett, Mrs. Cordelia H.	Gamble Bros. Clinic	Greenville
Hatchett, Mrs. Harriett S.	Fite Hospital	Columbus
Maddox, Mrs. Marie I.	c/o Dr. E. E. Robinson	Meridian
Mason, Mrs. Irene	c/o Drs. Hirsch and Beck	Greenville
Mims, Minnie L.	Greenwood Leflore Hospital	Greenwood
Paris, Margaret J.	Vicksburg Hospital	Vicksburg
Pollard, Katie	N. Delta Compress & Whse. Co.	Clarksdale
Rhodes, Sue	Drs. Gamble Clinic	Greenville
Taylor, Minta H.	N. Miss. Community Hospital	Tupelo
Wates, Mrs. Elizabeth N.*	3950 Council Circle	Jackson
Young, Effie	Pontotoc Clinic	Pontotoc

MISSOURI

Atkinson, Florence S.	DePaul Hospital	St. Louis
Bauer, Mrs. Mary Hoffman	853 Westgate Ave.	St. Louis
Booth, Margaret A.	1206 Sunset Ave.	Richmond Heights, St. Louis Co.
Buenger, Viola M.	1177 Tompkin St.	St. Charles
Dickison, Hazel M.	Christian Hospital	St. Louis
Gay, Reva**	5512 Delmar	St. Louis
Glenn, Tommie P.	6129 Hoffman	St. Louis
Glueck, Mrs. Martha Jacob	1154 Bayard	St. Louis
Gronewald, Alice H.	416 S. Kingshighway	St. Louis
Grupp, Doris M.	908 Beaumont Medical Bldg.	St. Louis
Hannis, Mrs. Rose G.***	4541 Shenandoah	St. Louis
Hartmeister, Meta M.	St. Louis County Hospital	St. Louis
Hopkins, Myrtle G.	Jewish Hospital	St. Louis
Klein, Grace***	Brandon Hospital	Poplar Bluff
Lamb, Helen	Barnes Hospital	St. Louis
Lindsey, Jessie	4468 Forest Park Blvd.	St. Louis
Newman, Mrs. Beatrice M.	5512 Delmar Blvd.	St. Louis
Sister M. Cyrilla Wellman	St. Joseph's Hospital	Boonville
Marcum, Edith	216 S. Kingshighway	St. Louis

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Sister M. Canisius Fahey	St. John's Hospital	St. Louis
Sister Theresa Kettelhut	Deaconess Hospital	St. Louis
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Sieg, Hattie C.	DePaul Hospital	St. Louis
Slasor, Zelle	1400 Professional Bldg.	Kansas City
Waltke, Mrs. Marie F.	Park Plaza Hotel	St. Louis
MONTANA		
Christianson, Augusta V.	Montana Deaconess Hospital	Great Falls
Clayton, Lillian B.		Whitefish
Diefenbaugh, Lela M.	Kennedy Deaconess Hospital	Havre
Eliasson, Hilda	Columbus Hospital	Great Falls
Henne, Bessie M.	St. Vincent's Hospital	Billings
LaRocque, Dorothy	St. Vincent's Hospital	Billings
Marsh, Margaret	Holy Rosary Hospital	Miles City
Rausch, Sara	Government Hospital	Fort Peck
Reed, Loree J.	Bozeman Deaconess Hospital	Bozeman
Reese, Mrs. Anna B.	Deaconess Hospital	Great Falls
Rowland, Mrs. Mae	Babcock Apt., No. 18	Billings
Sister Agnes Dooney	St. Patrick's Hospital	Missoula
Sister Aloysia Desy	Holy Family Hospital	St. Ignatius
Sister M. Azilda	St. Joseph Hospital	Lewiston
Mother Belina Poltz	St. Mary Hospital	Conrad
Sister Mary Charles	Holy Rosary Hospital	Miles City
Sister Eugene de Tivoli	St. Patrick Hospital	Missoula
Sister Mary Fanahan***	Holy Rosary Hospital	Miles City
Sister M. Garina Storck	St. Mary Hospital	Conrad
Sister M. Helen Dugrenier	Columbus Hospital	Great Falls
Sister M. Lanfrida Becker	St. Mary Hospital	Conrad
Sister Rachel Rausch	St. John's Hospital	Helena
Sister M. Theophana	St. Joseph Hospital	Lewistown
Sister M. Vericunda	Sacred Heart Hospital	Havre
Sister Victor	St. Patrick Hospital	Missoula
Sister Mary William***	Holy Rosary Hospital	Miles City
Winter, Mrs. Olive E.***	401 S. Lake Ave.	Miles City
NEBRASKA		
Anderson, Marie S.	Immanuel Deaconess Institute	Omaha
Bredenberg, Dorothy O.	St. Joseph's Hospital	Omaha
Brich, Marcella	St. Catherine Hospital	Omaha
Brogan, Ellen	St. Elizabeth's Hospital	Lincoln
Bulin, Ada	M. E. Hospital	Scottsbluff
Dickinson, Agnes G.	Lutheran Hospital	Omaha
Dorsey, Josephine J.	Nicholas Senn Hospital	Omaha
Dugan, Elizabeth I.*	St. Joseph's Hospital	Omaha
Ganzel, Charlotte A.	Nicholas Senn Hospital	Omaha
Gulotta, Mrs. Wilhelmina	Lincoln General Hospital	Lincoln
Hain, Agnes G.	Bishop Clarkson Mem'l Hosp.	Omaha
Klasen, Rosalie K.	St. Joseph Hospital	Omaha
Maxwell, Georgia M.	Methodist Episcopal Hospital	Scottsbluff
Miller, Lillian	Roche Hospital	Sidney
Nelson, Leona K.**	Methodist Episcopal Hospital	Omaha
Omig, Mrs. Ruth E.	Immanuel Deaconess Hospital	Omaha
Owens, Mrs. Mabel R.	Immanuel Deaconess Institute	Omaha
Pratt, Mabel A.	1201 Phillip Ave.	Norfolk
Sister M. Asella	St. Elizabeth Hospital	Lincoln
Sister M. Scholastica ***	3300 No. 60th	Omaha
Sister M. Ursula Dixon	St. Mary's Hospital	Nebraska City

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Seni, Helen C.	St. Francis Hospital	Grand Island
Shaffer, Anna M.	Nebraska M. E. Hospital	Omaha
Svoboda, Kathryn C.	Nicholas Senn Hospital	Omaha
Woodgate, Mrs. Marie E.	109 W. 7th St.	North Platte
Young, Pauline	Bryan Memorial Hospital	Lincoln

NEW HAMPSHIRE

Dawson, Mrs. Winifred C.***	336 Central St.	Franklin
Eagles, Beatrice C.	Clinic	Berlin
Mosher, Faye R.	Memorial Hospital	North Conway
Pedersen, Carin H.	Portsmouth General Hospital	Portsmouth
Thompson, Vera L.	Margaret Pillsbury Hospital	Concord
Whyte, Evalyn M.	Mary Hitchcock Mem'l Hosp.	Hanover

NEW JERSEY

Aberg, Harriet L.	Muhlenberg Hospital	Plainfield
Arnold, Erina M.	Newton Memorial Hospital	Newton
Bowles, Nency May	Hospital of St. Barnabas	Newark
Bryant, Laura	Cooper Hospital	Camden
Cook, Maude M.	Presbyterian Hospital	Newark
Dangler, Jessie M.	Dr. E. C. Hazard Hospital	Long Branch
Dangler, Leona	Dr. E. C. Hazard Hospital	Long Branch
Darlington, Thelma C.	Overlook Hospital	Summit
Dutton, Philomena	St. Peter Hospital	New Brunswick
Furlong, Rose L.	Elizabeth General Hospital	Elizabeth
Gaumer, Mrs. Miriam Smith	422 First St.	Lakewood
Hale, Florence	St. Peter General Hospital	New Brunswick
Hawk, Eleanor R.	Newark Memorial Hospital	Newark
Hill, Nathalie	Beth Israel Hospital	Newark
Holcombe, Mrs. Emily M.	780 Broadway	Newark
Horne, M. Catherine	929 Revere Ave.	Trenton
Kehoe, Margaret	All Souls' Hospital	Morristown
Kropa, Ruth M.	Somerset Hospital	Somerville
Logan, Della	Cooper Hospital	Camden
Lowery, Martha E.	685 High St.	Newark
Loyd, Belle	Overlook Hospital	Summit
McGarry, Helen M.	Morristown Memorial Hospital	Morristown
Marren, Alma D.	St. Francis Hospital	Trenton
Mitchell, Mrs. Susan S.***	279 Montclair Ave.	Newark
Morang, Elizabeth H.	1 Union St.	Montclair
Nash, Mrs. Ruth	Muhlenberg Hospital	Plainfield
Patterson, Mary A.	Cooper Hospital	Camden
Patterson, Pearl C.	Dr. E. C. Hazard Hospital	Long Branch
Reynolds, Harriet E.	Memorial Hospital	Morristown
Sister M. Benildis Schumm	St. Francis Hospital	Trenton
Stone, Mae	Presbyterian Hospital	Newark
Strom, Ruth E.	211 So. Center St.	Orange
Sutton, Alberta	Box 86	Lake Hopatcong
Thompson, Ora E.	Elizabeth General Hospital	Elizabeth
Weaver, Gertrude M.	Princeton Hospital	Princeton
Welker, Marianne H.	115 Thomas St.	Bloomfield
White, Mrs. Helen Fritz	R. F. D. No. 2. Box 66H	New Brunswick
Winsor, Mrs.Phyllis Gilmore	Presbyterian Hospital	Newark

NEW MEXICO

McIntosh, Blanche	Carrie Tingley Hospital	Hot Springs

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NEW YORK

Aalrud, Mrs. Astrid	420 E. 59th St.	New York
Adrion, Pearl C.	Mary Immaculate Hospital	Jamaica, L. I.
Alber, Emma	51 Mitchell Ave.	Binghamton
Anderson, Mrs. Sally A.	210 E. 64th St.	New York
Andrews, Mabel	Queen's Hospital	Jamaica
Armstrong, Anna E.	Memorial Hospital	New York
Armstrong, Ethel	39 Auburn Place	Brooklyn
Arent, Madeleine***	100 Parkway Road	Bronxville
Arthur, Joan	Brooklyn Hospital	Brooklyn
Bader, Helen E.	Mary McClellan Hospital	Cambridge
Barry, Margaret	St. Mary's Hospital	Rochester
Bean, Verna E.	480 Herkimer St.	Brooklyn
Bentz, Rosemary F.	18 E. 48th St., Rm. 1902	New York
Bieber, Clara G.	141 W. 109th St.	New York
Billmeyer, Hancie M.	Wyckoff Heights Hospital	Brooklyn
Blade, Caroline E.	Brooklyn Hospital	Brooklyn
Blanchard, Hazel*	1910 Seventh Ave.	Troy
Botsford, Ruth	Strong Memorial Hospital	Rochester
Bradford, Katherine G.	Peck Memorial Hospital	Brooklyn
Burg, Mrs. Flora M.	1320 York Ave.	New York
Burger, E. Dorothy***	Skidmore College	Saratoga Springs
Calder, Dorothy N.**	Yonkers General Hospital	Yonkers
Clode, Mrs. Mary	161 Emerson Place	Brooklyn
Colleran, Emma A.	Ellis Hospital	Schenectady
Collins, Agnes G.	New York Hospital	New York
Cook, Kate	Highland Hospital	Rochester
Cook, Mildred	Coney Island Hospital	Brooklyn
Craven, Helen K. *Life Member*	City Hospital	Welfare Island, New York
Cummings, Marion	Hudson City Hospital	Hudson
Danaher, May G.	1845 Becker St.	Schenectady
Danzeisen, Mrs. Estelle W.	Midtown Hospital	New York
deGraaf, Hermine	Long Island Hospital	Brooklyn
deNoyelles, Mrs. Mae Heath	St. John's Riverside Hospital	Yonkers
Desmond, Mary	North Country Community Hosp.	Glen Cove, L. I.
Dobbie, Marie P.	63 Northampton St.	Buffalo
DeYoung, Estella	c/o Miss B. Parker, 130 Ocean Av.	Brooklyn
Dolce, Mildred R.	496 Swan St.	Buffalo
Dougan, Janet B.	Morrisania Hospital	New York
Dougherty, Donna D.	Wilson Memorial Hospital	Johnson City
Edwards, Mrs. Pauline H.***	1240 Pacific St.	Brooklyn
Eveleth, Grayce S.	337 East 30th St.	New York
Fink, Mrs. Louise Merkle***	311 E. 72nd St.	New York
FitzGerald, S. Louise	815 Seward St.	Rochester
Flanagan, Mrs. Helen G.***	Chenango Memorial Hospital	Norwich
Fowler, Mrs. Sophie K.	38 East 85th St.	New York
Foy, Cora Lee	Manhattan Eye, Ear and Throat Hospital	New York
Franke, Elsa E.	1474 Glenwood Blvd.	Schenectady
Gale, Mrs. Mary***	223 Maple Ave.	Riverhead, L. I.
Gallon, Martha	Coney Island Hospital	Brooklyn
Gaupp, Roberta M.	Ellis Hospital	Schenectady
Geiss, Mrs. Helen M.	Strong Memorial Hospital	Rochester
Gilleran, Gertrude	Hudson River State Hospital	Poughkeepsie
Gilliland, Eddie M.	Jamaica Hospital	Jamaica
Glenz, Muriel M.	Minor Surgical Nursing Service	Hempstead, L. I.

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Graham, Ada Mary	141 W. 109th St.	New York
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Healy, Mrs. Faith DeBaun***	116 W. 197th St., Bronx	New York
Hendrickson, Grace L.	Meadowbrook Hospital	Hempstead, L. I.
Henneberger, Martha M.	Woman's Hospital	New York
Hess, Mrs. Frances	Long Island College Hospital	Brooklyn
Hoge, Esther H.	700 West 168th St.	New York
Horwitt, Bebe M.	Brooklyn Hospital	Brooklyn
Hughes, Grace G.	Woman's Hospital	New York
Jenne, Mary A.	Queen's General Hospital	Jamaica
Jennings, Gertrude M.	New Rochelle Hospital	New Rochelle
Johnston, Maude	317 — 73rd St.	Brooklyn
Jones, Deborah	528 Warren St.	Albany
Jones, Marion F.***	131 Furmans St.	Syracuse
Kane, Ethel M.	Strong Memorial Hospital	Rochester
Keller, Hazel C.	St. Francis Hospital	Olean
Keller, Bessie M.	Cumberland Hospital	Brooklyn
Kelly, Agnes M.	Israel Zion Hospital	Brooklyn
Kelly, Ida B.	704 — 8th St.	Niagara Falls
Kendall, Mildred M.	Strong Memorial Hospital	Rochester
Kimball, Florence	Memorial Hospital	Catskill
Korenik, Boldiena A.	Jamaica Hospital	Richmond Hill. L.I.
Krieger, Mrs. Bessie L.	103 Hooker Ave.	Poughkeepsie
Lambert, Marcella F.	Kings County Hospital	Brooklyn
Lapinski, Pauline	Long Island College Hospital	Brooklyn
Lemke, Anna C.	Woman's Hospital	New York
Lewis, Mrs. Elizabeth	Alice Hyde Hospital	Malone
Litzen, Catherine	1320 York Ave.	New York
Lindberg, Gladys L.	Staten Island Hospital	Tompkinsville, S. I.
Lipinski, Bernice	Strong Memorial Hospital	Rochester
Ludwig, Laura M.	Jamaica Hospital	Jamaica
Lynch, Eunice	45-35 Parsons Blvd.	Flushing, L. I.
Lynch, Regina G.	Morrisania Hospital	Bronx
McCoy, Mrs. Charlotte	1320 York Ave.	New York
McFadden, Dessie	1320 York Ave.	New York
MacIver, Kathryn M.	Bay Ridge Sanitarium	Brooklyn
McKay, Cora, *Honorary*	Albany Hospital	Albany
McKay, Mildred	120 Keyes Ave.	Watertown
MacQuarrie, Barbara	New York Hospital	New York
McQuilton, Ida M.	Nassau Hospital	Mineola, L. I.
Masler, Catherine A.	105 Carlton Ave.	Brooklyn
Mavor, Mrs. Mae	New York Orthoepedic Hospital	New York
Mayfield, Lois	Kings County Hospital	Brooklyn
Meek, Mary A.	1255 Delaware Ave.	Buffalo
Minnick, Hilda I.	North Country Community Hosp.	Glen Cove, L. I.
Morrow. Dorothy H.	Highland Hospital	Rochester
Moss, Naomi S.	248 Main St.	Hempstead, L. I.
Moyer, Mrs. Louise Doty	300 Lenox Road, Apt. M5	Brooklyn
Mullin, Sara R.	New York Hospital	New York
Murphy, Anna D.	Ellis Hospital	Schenectady
Norris, Anna V.	United Hospital	Port Chester
O'Neill, Anna T.	Israel Zion Hospital	Brooklyn
O'Neill, Mrs. Veronica T.		Altona
Patten, Helen L.	62 Chestnut St.	Cohoes
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Perry, Mrs. Elizabeth L.	240 East Ave.	Lockport
Perry, Mary F.	Midtown Hospital	New York

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Prentice, Mildred V.	Bethany Deaconess Hospital	Brooklyn
Rabinowitz, Frances	Staten Island Hospital	Tompkinsville, S. I.
Racette, Alice M.	Ellis Hospital	Schenectady
Rees, Madge	Ellis Hospital	Schenectady
Reusch, Edith Marion	Reconstruction Unit	New York
Riebhoff, Grace H.	Freeport Hospital	Freeport, L. I.
Roach, Evelyn	500 East 80th St.	New York
Roberge, Jeanne	Cumberland Hospital	Brooklyn
Rogge, Mrs. Anna Kline	Kings County Hospital	Brooklyn
Ryder, Mary T.	636 Sterling Place	Brooklyn
Russell, Jessie G.	New York Hospital	New York
Russell, M. Mabel	Potsdam Hospital	Potsdam
Sister Mary de Sales	Mercy Hospital	Hempstead, L. I.
Sister M. Inez O'Mailia	Mercy Hospital	Buffalo
Sister M. Nazarene	Mary Immaculate Hospital	Jamaica, L. I.
Sister St. Ann	St. Joseph's Hospital	Elmira
Sister St. Joseph Creighton	St. Joseph's Hospital	Elmira
Satterlee, Charlotte D.	Memorial Hospital	Albany
Schmid, Carol	880 Lafayette Ave.	Buffalo
Schmidt, Lucy L.	Hospital for Joint Diseases	New York
Secrest, Clara M.	Homer Folks Hospital	Oneonta
Shatz, Esther	Brooklyn Jewish Hospital	Brooklyn
Shellenberger, Frances V.	196 Washington Park	Brooklyn
Shoemaker, Jane E.	Morrisania City Hospital	New York
Shupp, Miriam G.	Strong Memorial Hospital	Rochester
Silverman, Mrs. Helen E.	8801 Shore Road	Brooklyn
Smith, Alice C.	Prospect Heights Hospital	Brooklyn
Smith, Caroline B.	Vassar Brothers Hospital	Poughkeepsie
Smith, Golda	567 Prospect Place	Brooklyn
Sopko, Theresa	Brunswick Hospital	Amityville, L. I.
Spear, Elizabeth	United Hospital	Port Chester
Spencer, Eva	City Hospital	Salamanca
Spongberg, Alice J.	Bayridge Sanitarium	Brooklyn
Steffen, Gertrude	Long Island College Hospital	Brooklyn
Stewart, Anna E.	Manhattan Eye, Ear and Throat Hospital	New York
Suhrhoff, Marion A.	Midwood Hospital	Brooklyn
Sullivan, Margaret F.	265 Herrick Road	Southampton
Tippit, Clyde D.	200 West 16th St.	New York
Tschudin, Marie	Vassar Bros. Hospital	Poughkeepsie
Van Gorden, Mrs. Alma G.	68 Arch St.	Johnson City
von Bockum-Dolffs, Irmgard	Hosp. for Ruptured & Crippled	New York
Vornholt, Anna L.	Manhattan Eye, Ear and Throat Hospital	New York
Wandell, Eloise P.	57 Williams St.	Catskill
Ward, Gladys	43-62 Kissena Blvd.	Flushing
Wark, Marion K.	22 Junius St.	Brooklyn
Weaver, R. Edith	Hudson City Hospital	Hudson
Weisensee, Barbara	Minor Surgical Nursing Service	Hempstead, L. I.
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Wright, Anne M.	Nassau Hospital	Mineola, L. I.
Wurtz, Clara A.	200 Wallace Ave.	Buffalo

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Yokus, Frances C.	Manhattan Eye, Ear and Throat Hospital	New York
Yoskey, Julia A.	215 W. 101st St.	New York
Ziegler, Martha T.	Kings County Hospital	Brooklyn
NORTH CAROLINA		
Burriss, Hattie A.	117 Castle St.	Wilmington
Carter, Hazel		
Clark, Irene S.	Roanoke Rapids Hospital	Roanoke Rapids
Derrick, Ora	James Walker Memorial Hosp.	Wilmington
Dowd, Nova J.	Rex Hospital	Raleigh
Fleming, Maude M.	Box 327	Louisburg
Gath, Mrs. Fanny E.	Maria Parham Hospital	Henderson
Goodman, Eliza D.	Duke University Hospital	Durham
Hamm, Alma S.	Box 3333, Duke Hospital	Durham
Hardin, Mary Stephens	Rutherford Hospital	Rutherfordton
Henley, Jamie	N. C. O. Hospital	Gastonia
Luther, Nell	93 White Fawn Drive	Asheville
Medlin, Mrs. Addie F.	Route 1	Roanoke Rapids
Muller, Mary H.	Duke University Hospital	Durham
Reames, Mary F.	Guthery 1-A	Charlotte
Salmon, Carrie I.	Park View Hospital	Rocky Mount
Scarborough, Mante	Presbyterian Hospital	Charlotte
Sellars, Bessie L.	416 Front St.	Burlington
Sievers, Mrs. Esther H.		Arden
Smith, Carrie	Baker Sanitorium	Lumberton
Snively, Mary H.	Duke University Hospital	Durham
NORTH DAKOTA		
Ammentorp, Magna	Deaconess Hospital	Grand Forks
Berg, Sina		Horace
Engen, Christine G.	Trinity Hospital	Minot
Hallberg, Caroline B.	Mandan Deaconess Hospital	Mandan
LaValla, Margaret	Quain & Ramstad Clinic	Bismarck
Lyngstad, Charlotte	Quain & Ramstad Clinic	Bismarck
Mattson, Sophia H.	St. Michael's Hospital	Grand Forks
Mirick, Grace	St. John Hospital	Fargo
Olsen, Nona A.	522 — 3rd Ave., E.	Williston
Sister M. Angela Maher	Mercy Hospital	Williston
Sister M. Brendan Tuohy	Mercy Hospital	Langdon
Sister M. Camillus	Mercy Hospital	Valley City
Sister M. Dolorosa	Mercy Hospital	Devils Lake
Sister M. Dosithea Swoboda	Trinity Hospital	Jamestown
Sister Georgiana Delmore	St. John's Hospital	Fargo
Sister St. Elizabeth Heyn	St. Michael's Hospital	Grand Forks
Sister St. Ignatius	Trinity Hospital	Jamestown
Sister M. Veronica	Mercy Hospital	Valley City
Sister Mary William	St. Joseph's Hospital	Minot
Winters, Ella A.	St. Luke's Hospital	Fargo
OHIO		
Adams, Lou E.	Cleveland Clinic Hospital	Cleveland
Allwein, Aida B.	Mt. Sinai Hospital	Cleveland
Auble, Mada C.	613 Home Savings & Loan Bldg.	Youngstown
Barnett Florence M.	Glenville Hospital	Cleveland
Barth, Alice L., *Life Member*	Youngstown Hos. Ass'n N.S. Unit	Youngstown
Bartholomew, Helen G.	Lutheran Hospital	Cleveland
Beros, Anna E.***	St. Joseph's R. C. Rectory	Toronto

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Butler, Naomi	Cincinnati General Hospital	Cincinnati
Callot, Mrs. Henriette May	11427 Ashbury	Cleveland
Campbell, Violet	St. Elizabeth's Hospital	Youngstown
Carpenter, Grace E.	Children's Hospital	Cincinnati
Case, Mrs. Loretta F.	Box 347, Station D.	Cleveland
Colan, Catherine	University Hospitals	Cleveland
Correll, Marion A.	St. Luke's Hospital	Cleveland
Coughlin, Johanna M.	Good Samaritan Hospital	Dayton
Crauder, Dona	107 Stockton Ave.	Dayton
Davis, Ruth Lucille	City Hospital	Cleveland
Dickerson, Mrs. Ann N.	1601 Mars Avenue	Lakewood
Dingledine, Margaret	335 North Robert Blvd.	Dayton
Dixon, Mrs. Frances W.	St. Luke's Hospital	Cleveland
Driver, Marvil	City Hospital	Akron
Duffy, Florence	St. Vincent's Charity Hospital	Cleveland
Duggar, Charlotte	University Hospitals	Cleveland
Ealy, Inez M.	Elyria Memorial Hospital	Elyria
Edwards, Grace M.	University Hospitals	Cleveland
Fife, Gertrude L., *Honorary Member Ohio Ass'n*	University Hospitals	Cleveland
Franzen, Elizabeth M.	St. Thomas Hospital	Akron
Giffin, Eva M.	DeCourcy Clinic	Cincinnati
Gilby, Mrs. Mary M.	121 Mulberry St.	Lebanon
Goodman, Mary Lucile	University Hospitals	Cleveland
Graff, Ruth	University Hospitals	Cleveland
Gruler, Imelda M.	3157 Glenmore, Westwood	Cincinnati
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Hale, Mrs. Dessa C.	Hale Hospital	Wilmington
Hanson, M. Birdella	Box 2243	Cleveland
Hawkins, Mrs. Marjorie S.	R. F. D. No. 1	Niles
Heckathorn, Helen M.	St. Thomas Hospital	Akron
Hollister, Marian	University Hospitals	Cleveland
Houghland, Mrs. Lillian P.	1932 E. 97th St.	Cleveland
Jennings, Elizabeth	St. Elizabeth Hospital	Dayton
Kaiser, Emilie	University Hospital	Columbus
King, Mabel E.	Bethesda Hospital	Cincinnati
Kocklauner, Frances	Universitl Hospitals	Cleveland
Krakau, Mrs. Juliet Stanton	14689 Euclid Avenue	Cleveland
Lott, Anna Mae	Good Samaritan Hospital	Cincinnati
Mattley, Alice J.	Cleveland Clinic Hospital	Cleveland
McAllister, Mrs. Margaret A.	10307 Churchill Avenue	Cleveland
McAskill, Mary I.	1018 Union Central Bldg.	Cincinnati
McGilliard, Dorothy	223 N. Cooper Ave.	Lockland
McMahon, Janet	City Hospital	Cleveland
Miller, Mary F.	Elyria Memorial Hospital	Elyria
Momeyer, Myrn E.	St. Luke's Hospital	Cleveland
Moore, Clara R.	St. Alexis Hospital	Cleveland
Moore, Rae E.	Akron City Hospital	Akron
Morgan, Martha A.	St. Ann's Hospital	Cleveland
Olson, Mrs. Alma O.	2840 Burnet Ave.	Cincinnati
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Rockwood, Melva Marie	Lutheran Hospital	Cleveland
Rose, Winifred	University Hospitals	Cleveland
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Sister M. Benignus Leahy	Mercy Hospital	Hamilton
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Sutton, Bessie	City Hospital	Cleveland
Taylor, Jeanette	Union Hospital	Dover
Terry, Anna	St. Vincent's Charity Hospital	Cleveland
Van Arsdale, Mrs. Myra	St. Luke's Hospital	Cleveland
Walker, Marjory H.	Mt. Sinai Hospital	Cleveland
Walters, Martha A.	Mt. Sinai Hospital	Cleveland
Ware, Mrs. Mary H., *Life Member*	Children's Hospital	Cincinnati
Wass, Agnes A.	Woman's Hospital	Cleveland
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Weber, Lillian	Women's & Children's Hospital	Toledo
Wells, Louise	Good Samaritan Hospital	Cincinnati
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Wilkes, Vernie M.	664 North Park St.	Columbus
OKLAHOMA		
Diefenderfer, Dixie Lee	Wesley Hospital	Oklahoma City
Gandy, Hellon*	Wesley Hospital	Oklahoma City
Graham, Mrs. Estelle	Valley View Hospital	Ada
Loftus, Julia D.**	Community Hospital	Elk City
Parks, Mrs. Eula McNiel	926 S. 6th St.	McAlester
Pitt, Mrs. Beatrice W.	Wesley Hospital	Oklahoma City
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Shockites, Helen A.	Indian Hospital	Claremore
Tvson, Dorothy H.	Government Hospital	Fort Sill
Williams, Mrs. Bernice E.***	1428 W. Cedar St.	Durant
OREGON		
Amort, Alvina	1312 Mill St.	Eugene
Atkinson, Alice E.	Charlton Hospital	Tillamook
Brown, Avis M.	622 Franklin Ave.	Astoria
Brye, Olivia	Emanuel Hospital	Portland
Bunch, Mrs. Josephine B.	4030 S. W. Condor Ave.	Portland
Butler, Hazel	2166 N. W. Irving St.	Portland
Caraway, Olga L.***	R. 6, Box 1042	Portland
Carter, Mrs. Hazel P.***	827 Williamette St.	Eugene
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Downing, Ruth	St. Mary's Hospital	Astoria
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Durno, Mrs. Evelyne B.	1913 Hillcrest Road	Medford
Fagan, Jeanne C.	2366 W. Burnside St.	Portland
Feser, Anne**	Medical Dental Surgery	Portland
Fife, Marie	164 Hawthorne	Bend
Fletcher, Mrs. Jessie C.	The Dalles Hospital	The Dalles
Floren, Marie E.	Emmanuel Hospital	Portland
Gammon, Mrs. Edna C.	301 U. S. Nat'l Bank Bldg.	The Dalles
Giddings, Margret	6425 N. E. Alameda	Portland
Grunefelder, Emma E.	Emanuel Hospital	Portland
Harris, Louise***	6325 S. E. Morrison St.	Portland
Herin, Miriel	Emanuel Hospital	Portland
Johnson, Mrs. Elizabeth D.	2005 — 28th St.	Milwaukie
Laird, Rosena	65 West 25th	Eugene
Love, Mrs. Margaret H.	3130 N. E. 19th St.	Portland
McCorkle, Mrs. Clara	2055 N. W. Lovejoy St.	Portland
McDonald, Lillian M.	Salem General Hospital	Salem
McElligott, Mabel*	4705 N. E. Mallory Ave.	Portland
McGee, Agnes	2328 N. W. Everett St.	Portland
Maher, Bernice	188 — 11th St.	Eugene
Markworth, Marjorie R.	2366 W. Burnside	Portland
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O'Brien, Mrs. Daisy***	Holmes Lane	Oregon City
Ogelsby, Fannie M.	Deaconess Hospital	Salem
Paulson, Ida C.	Oregon City Hospital	Oregon City
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Sister Mary Angela	Sacred Heart General Hospital	Eugene
Sister Anna H. Duerksen	665 So. Winter St.	Salem
Sister Ottilia	St. Mary's Hospital	Astoria
Sister M. Patrick Mahoney	St. Elizabeth Hospital	Baker
Sister Mary Vincent	St. Vincent Hospital	Portland
Schnepper, Louise H.	1011 S. E. 60th Ave.	Portland
Shaw, Blossom C.	27 Short St.	Corvallis
Swenson, Mrs. Emma Haug	5268 N. Commercial Ave.	Portland
Walker, Faye	Good Samaritan Hospital	Portland
Wilmot, Katurah M.	2026 S. E. Elliott Ave.	Portland
Zell, Gladys H.	1195 N. 14th St.	Salem

PENNSYLVANIA

Abary, Edith E.*	Harrisburg Hospital	Harrisburg
Allburger, Mrs. Frances M.	107 E. Tenth St.	Honesdale
Anderson, Thorene G.	81 Katherine St.	Port Allegany
Arnold, Dorothy	Indiana Memorial Hospital	Indiana
Baker, Alma G.	Brookville Hospital	Brookville
Barclay, Mrs. Mary H.	Uniontown Hospital	Uniontown
Barie, Elfreda	St. John's Hospital	Pittsburgh, N. S.
Bartruff, Sara C.	Beaver Valley General Hospital	New Brighton
Beausoleil, Anne	St. Joseph's Hospital	Lancaster
Beringer, Mary L.	Rochester General Hospital	Rochester
Bettinger, Agnes E.	R. F. D. No. 1	Royersford
Bingel, Esther A.	St. Luke's Hospital	Bethlehem
Borgstrom, Hilma C.	Stetson Hospital	Philadelphia
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Burket, Cleo P.	Lewistown Hospital	Lewistown
Byers, Gertrude S.	Allegheny General Hospital	Pittsburgh
Cain, Leota B.	Carbondale General Hospital	Carbondale
Calvin, Ella M.	123 Ogle Ave.	Wilmington, Del. (temp.)
Campbell, Clara B.	332 — 6th Avenue	McKeesport
Carney, Helen U.	Valley Hospital	Sewickley
Carpenter, Lena	1015 Wyoming Avenue	Exeter
Chapman, Mrs. Mildred K.	Metropolitan Hospital	Philadelphia
Cleaver, Kathryn E.	Mercy Hospital	Wilkes-Barre
Coane, Marcelen P.	University of Penna. Hosp.	Philadelphia
Cogswell, Mrs. Gilly Davis	4041 Bigelow Blvd.	Pittsburgh
Connolly, Pearl E.	1542 Easton Avenue	Bethlehem
Cool, Mary E.	West Penn Hospital	Pittsburgh
Costello, Ella T.	Montefiore Hospital	Pittsburgh
Crawley, Stella M.	637 Indiana Avenue	Glassport
Davies, Marian	Moses Taylor Hospital	Scranton
Davis, Edith	Allentown Hospital	Allentown
Davis, Elizabeth F.	South Side Hospital	Pittsburgh
Davis, Elizabeth M.	Palmerton Hospital	Palmerton
Davis, Mrs. Hester V. P.	Germantown Hospital	Philadelphia
Dawher, Emma E.	Lying-In Hospital	Philadelphia
Degutis, Margaret M.	Pottsville State Hospital	Pottsville
Dibert, Helen L.	Altoona Hospital	Altoona
Dickinson, Mary K.	Mary Drexel Children's Hosp.	Philadelphia
Dodson, Myrtle L.	Shamokin State Hospital	Shamokin
Donavan, Rose G.	Mt. Sinai Hospital	Philadelphia
Dougherty, Gertrude	Charleroi-Monesson Hospital	N. Charleroi
Dougherty, Loretta A.	4601 Bayard St.	Pittsburgh 13
Dowling, Ruth C.	Elizabeth Steel Magee Hosp.	Pittsburgh
Duffield, Caroline	Butler Co. Memorial Hospital	Butler
Ellsworth, Catherine C.	Williamsport Hospital	Williamsport
Emerick, Ida McK.	Rochester General Hospital	Rochester
Evans, Mrs. Evelyn E.	Hahnemann Hospital	Scranton
Foster, Anne Blanche	Citizens' General Hospital	New Kensington
Freeland, Mrs. Eva Ward	Greene Co. Memorial Hospital	Waynesburg
Fulton, Faye L.	Methodist Episcopal Hospital	Philadelphia
Gagliardi, Katharine F.	Lankenau Hospital	Philadelphia
Gegg, Agnes	Lancaster General Hospital	Lancaster
George, Rebekah W.	Shadyside Hospital	Pittsburgh
Giffen, Margaret M.	Valley Hospital	Sewickley
Gilmore, Ruth S.	Butler Co. Memorial Hospital	Butler
Glenn, Marie	Maple Avenue Hospital	DuBois
Glenn, Martha K.	Columbia Hospital	Wilkinsburg
Glick, Marie		Mountville
Glinz, Mary J.	Kensington Hosp. for Women	Philadelphia
Godell, Mrs. Ruth M.	921 Helen Ave. Grand View Hts.	Lancaster
Goff, Anne C.	720 Marlyn Road	Philadelphia
Grant, Anna K.	Conemaugh Valley Mem'l Hosp.	Johnstown
Greaves, Elizabeth	1733 Pine St.	Philadelphia
Hagenbach, Beatrice	Hershey Industrial School	Hershey
Hammond, Mary B.	Lying-In Hospital	Philadelphia
Hardes, Mary L.	South Bradford Hospital	Bradford
Hartenstein, Jessie M.	4534 Osage Ave.	Philadelphia

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Hitz, Leta A.	Community Hospital	Kane
Hobek, Margaret A.	Canonsburg General Hospital	Canonsburg
Houck, Edna I.	Philipsburg State Hospital	Philipsburg
Hough, Loretta A.	Westmoreland Hospital	Greensburg
Hunter, Bessie F.	Mt. Sinai Hospital	Philadelphia
Hurd, Sara	Memorial Hospital, Roxborough	Philadelphia
Ingram, Nancy	Philadelphia General Hospital	Philadelphia
Irons, Edwina M.	Episcopal Hospital	Philadelphia
Jenkins, Anna T.	State Hospital	Ashland
Johnston, Naomi A.	Methodist Episcopal Hospital	Philadelphia
Jones, Agnes M.	32 Harrison St.	Munhall
Jones, Katherine	Elizabeth Steel Magee Hosp.	Pittsburgh
Jones, Verona M.	Uniontown Hospital	Uniontown
Karns, Irene	McKeesport Hospital	McKeesport
Kauffman, A. Isabelle	Lancaster General Hospital	Lancaster
Kaufman, Mrs. Alverta H.	2419 — 5th Avenue	Altoona
Keebler, Sarah S.	3523 Aspen St.	Philadelphia
Kelly, Mrs. Alice D.	Mercy Hospital	Scranton
Kenney, Ellen E.	Connellsville State Hospital	Connellsville
Kimmel, Edith M.	Bryn Mawr Hospital	Bryn Mawr
King, Madeleine M.	848 Park Avenue	Meadville
Kissel, Esther M.	Harrisburg Hospital	Harrisburg
Knicely, Helena K.	Oil City General Hospital	Oil City
Knipper, Margaret E.	St. Joseph's Hospital	Philadelphia
Kolker, Bessye R.	Mt. Sinai Hospital	Philadelphia
Kramlich, R. Margaret	3804 Chestnut St.	Philadelphia
Krause, Helen C.	Temple University Hospital	Philadelphia
Kutz, Anna M.***	50 W. Main St.	Glen Lyon
Langan, Kathryn L.	J. C. Blair Memorial Hospital	Huntingdon
Laurence, Beatrix M.	Bradford Hospital	Bradford
Leidy, Mrs. Albertine R.	51 No. 40th St.	Philadelphia
Lewis, Hazel M.	Graduate Hospital	Philadelphia
Lewis, Rhoda	General Hospital	Wilkes-Barre
Light, Dorothy C.	115 S. Railroad St.	Hummelstown
Linden, Christine E.	Pittston State Hospital	Pittston
Lloyd, M. Elizabeth	255 So. 17th St., 25th floor	Philadelphia
Lockwood, Jennie M.	St. Joseph's Hospital	Philadelphia
Logue, Lois	470 Swissvale Ave.	Wilkinsburg
Lucas, Clara E.	University of Penna. Hospital	Philadelphia
Lutz, Bertha	Locust St. State Hospital	Shenandoah
McCormick, Margaret	1425 Vine St.	Scranton
MacCullough, Sylvia I.	2139 Green St.	Philadelphia
McDade, Mary A.	140 West Long Ave.	DuBois
McFate, Isabel	Nason Hospital	Roaring Spring
McGeary, Mary V.	438 Maple St.	Jenkintown
McKean, Mrs. Bertha P.	Passavant Hospital	Pittsburgh
McNary, Helen B.***	100 Wilson Ave.	Washington
McTurk, Mrs. Theresa A.	Metropolitan Hospital	Philadelphia
Machusak, Anne	Polyclinic Hospital	Harrisburg
Maguire, Mary A.	Women's College Hospital	East Falls, Philadelphia
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Margison, Mathilda M.	St. Francis Hospital	Pittsburgh

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Meszaras, Rose	R. F. D. 1, Box 122	Riegelsville
Millard, Elizabeth J.	General Hospital	Lancaster
Miller, Anna J.	5506 — 5th Avenue	Pittsburgh
Miller, Emma A.	Geisinger Memorial Hospital	Danville
Miller, Mary Ellen	York Hospital	York
Miller, Zella C.	Jameson Memorial Hospital	New Castle
Morris, Alice P.	Buhl Hospital	Sharon
Morrison, Jessie	Chester Hospital	Chester
Morrison, Maria M.	4900 Friendship Ave.	Pittsburgh
Myers, Margaret	Williamsport Hospital	Williamsport
Newcomer, Margaret J.	St. Francis Hospital	Pittsburgh
Noll, Katherine B.	Memorial Hospital	Monongahela
Oberholtzer, Irene S.	Pottstown Hospital	Pottstown
O'Hara, Marjorie E.	Mercy Hospital	Johnstown
O'Harra, Marian	Centre County Hospital	Bellefonte
Page, Mrs. Julia E.	Chester Co. Hospital	West Chester
Palmer, Elsie M.	Children's Hospital	Pittsburgh
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Peterson, Esther E.	Chester County Hospital	West Chester
Pfleiger, Bregetta F.	Mercy Hospital	Johnstown
Plowman, Katharine A.	Harrisburg Hospital	Harrisburg
Pnellie, Lena M.	Elk Co. General Hospital	Ridgeway
Ponesmith, Mrs. Sarah S.***	236 Walton St.	Lemoyne
Powell, Dora E.	Taylor Hospital	Ridley Park
Pusey, Alyce M.	Delaware County Hospital	Drexel Hill
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Reed, Marion A.		
Reese, Elizabeth M.	Philadelphia Lying-In Hospital	Philadelphia
Reigel, Ruth A.	Frankford Hospital	Philadelphia
Render, Gertrude	Homestead Hospital	Homestead
Richter, Leola M.	Presbyterian Hospital	Pittsburgh
Ritzert, Mildred	Eye and Ear Hospital	Pittsburgh
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Rose, Anna Marie	St. Margaret Memorial Hosp.	Pittsburgh
Sister M. Alacoque	St. Joseph's Hospital	Pittsburgh
Sister M. Audry Wagner	St. Vincent's Hospital	Erie
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Sister M. deLellis	Misericordia Hospital	Philadelphia
Sister M. Grace King	Mercy Hospital	Johnstown
Sister M. Irma Gatens	Mater Misericordia	Merion, Montgomery County
Sister Joseph Therese	St. Joseph's Hospital	Pittsburgh
Sister M. Jude McCall	Pittsburgh Hospital	Pittsburgh
Sister M. Ludgeris	Sacred Heart Hospital	Norristown
Sister M. Mercedes	Pittsburgh Hospital	Pittsburgh
Sister M. Pulcheria	Sacred Heart Hospital	Allentown
Sister M. Theodefrida	Sacred Heart Hospital	Allentown
Sister M. Theodore Hale	3339 McClure Ave.	Pittsburgh
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Simco, Mrs. Josephine	Allegheny General Hospital	Pittsburgh
Sinkler, Elsie B.	41 Summit St.	Chestnut Hill
Sisson, Daisy	St. Luke's Hospital	Bethlehem
Smiser, Elizabeth S.	Chestnut Hill Hospital	Philadelphia
Smith, Mrs. Myrtle W.***	3916 Beechwood Blvd.	Pittsburgh
Snyder, Myrta E.	Reading Hospital	Reading
Snyder, Mrs. Violet F.	363 W. Church St.	Somerset
Spangler, Grace L.	York Hospital	York
Sprecher, Esther M.	150 E. Main St.	Ephrata
Staiger, Esther M.	269 So. 19th St.	Philadelphia
Stewart, Ida	Titusville Hospital	Titusville
Stewart, Romaine M.	Eye and Ear Hospital	Pittsburgh
Stout, Evelyn	Abington Memorial Hospital	Abington
Strausser, Helen C.	Homeopathic Hospital	Pottstown
Strayer, Mary C.	Conemaugh Valley Mem'l Hosp.	Johnstown
Suter, Magdalene	Girard College Infirmary	Philadelphia
Schwab, Florence	Temple University Hospital	Philadelphia
Scott, Lora E.	Robert Packer Hospital	Sayre
Sergeant, Hannah M.	505 Bridge St.	Johnsonburg
Shaughnessy, Helen C.	St. Agnes Hospital	Philadelphia
Shekletski, Blanche	3 E. Main St.	Wanamie
Tarsa, Ann	Misericordia Hospital	Philadelphia
Tash, Kathryn L.	523 Hampshire Road	Drexel Park, Delaware County
Thomas, Anna	Wilkes-Barre General Hospital	Wilkes-Barre
Thomas, Sara S.	129 E. Edison Ave.	New Castle
Ulshafer, Nellie	State Hospital	Hazleton
Ungerman, Florence E.	Shadyside Hospital	Pittsburgh
Van Aux, Caroline	Scranton State Hospital	Scranton
VanderBurgh, Geraldine***	928 Campbell St.	Williamsport
Vichulis, Gussie E.	Germantown Hospital	Philadelphia
Viehmann, Margaret	Misericordia Hospital	Philadelphia
Vogel, Adelinda A.	223 Grant Ave.	Millvale
Vogt, Adeline E.	Mercy Hospital	Pittsburgh
Voshell, Mildred	C. H. Buhl Hospital	Sharon
Wagner, Florence E.	Pennsylvania Hospital	Philadelphia
Walker, Mrs. Helen Young**	1824 Wallace St.	Philadelphia
Waller, Grace P.	Bloomburg Hospital	Bloomburg
Walton, Mary E.	Mercy Hospital	Pittsburgh
Weidman, Beatrice A.	Episcopal Hospital	Philadelphia
Wells, Mary D.	Lemos B. Warne Hospital	Pottsville
West, Louise	Abington Memorial Hospital	Abington
Westbrook, Edith	Episcopal Hospital	Philadelphia
Whisler, Edna M.***	826 Edgemont Ave.	Chester
Whitman, Irene	Frankford Hospital	Philadelphia
Wigmore, Mary A.	Greenville Hospital	Greenville
Williams, Grace	Allegheny General Hospital	Pittsburgh
Windisch, Elsa F.***	7023 Rising Sun Avenue	Philadelphia
Windish, Florence	30 S. Third St.	Coplay
Witherspoon, Mrs. Helen	15 Stambaugh Ave.	Sharon
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BULLETIN OF THE NATIONAL ASSOCIATION OF NURSE ANESTHETISTS

The Bulletin of the National Association of Nurse Anesthetists is published by the National Association of Nurse Anesthetists; Executive, Editorial and Business Offices, 2065 Adelbert Road, Cleveland, Ohio.

Publishing Committee: Gertrude L. Fife, Chairman; Jewelle Fink, Harriet L. Aberg, Rose G. Donovan.

Entered as second class matter February 6, 1937, at the Postoffice at Cleveland, Ohio, under the Act of March 3, 1879.

Published quarterly; subscription price—members 50¢ per year; nonmembers, $1.00 per year.

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Economy, though a secondary feature, becomes of primary importance when it benefits the patient and when expensive gases are administered.

THE FOREGGER CO., Inc.

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These Things
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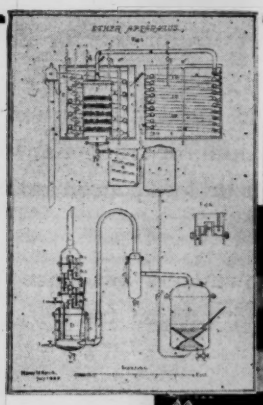
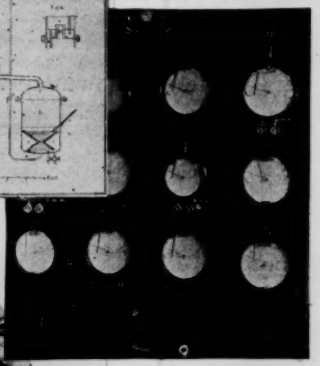


86 Years of Ether Production . . . Originally, ether was made by the open-fire, intermittent distillation method —involving the problems of fire hazard and the selection of the proper fraction of the distillate to be used for anesthesia. In 1853, Dr. E. R. Squibb perfected his process for the manufacture of ether by continuous steam distillation. His process made ether *safe* for anesthesia.



Rigid Control Standards . . . Important as are the standards set by the Squibb Laboratories in the selection of the raw materials used in making ether, the secret of its uniformity lies in its elaborate control during manufacture. A control panel keeps a chart record of temperatures and specific gravity during production. Sensitive devices automatically control each important step in the process of manufacture, thus assuring the *quality* of Squibb Ether.

Copper-lined Protection . . . Experience has shown that ethers develop aldehydes and peroxides when packed in ordinary containers. Years of research resulted in the development of the patented copper-lined container in which Squibb Ether is now packaged. The container definitely protects the *high purity* of Squibb Ether—the only ether protected by a copper-lined container.

Clinical Experience . . . Squibb Ether is used in over 85 per cent of American hospitals and in millions of cases every year. What greater evidence is there of the confidence of surgeons and anesthetists in the high uniform purity, potency, and safety of Squibb Ether?

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E. R. Squibb & Sons, 745 Fifth Ave., New York

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◆

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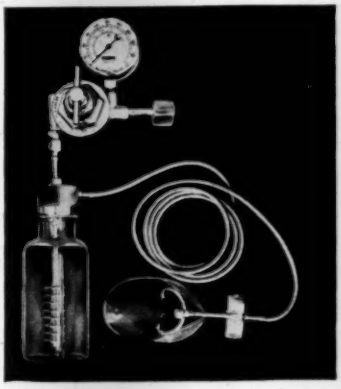
The Improved Lombard Inhaler

1. It is efficient.
2. It is inexpensive.
3. It is comfortable.
4. It is compact and light.
5. It is simple to operate.



6. It has a hinged face piece enabling patient to take food and water without removing the inhaler.
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